

Air Conditioning

Where Air-Conditioning Systems Were Installed in Kansas City in 1937

(Data Furnished by Kansas City Power and Light Co.)

Where Installed Equipment and Installer Tons Hp.

Banks

City Bank and Trust Co., 1801 Grand.....Westinghouse (Natkin & Co.) 4 5½
Community State Bank, 3131 Troost.....Carrier (Gustin-Bacon) 7½ 9½

Barber & Beauty Shops

Crestwood Beauty Shop, 309 E. 55th.....F-M (Nat. A. C. Eng. Corp.) 3 3½
R. M. Haston, 431 W. 12th.....Airtemp (Flarsheim Co.) 3 3½
Morningside Beauty Shop, 6205 Oak.....F-M (McNamara) 5 5½
Proctor-Wayman, 16 W. 63rd.....(Gen. Maint. Co.) 10 12
Frances-Ann (Uptown Theater) 3701 B'way Frigidaire (Carter Waters) 10 11
Wallace W. Westphal, 603 W. 48th.....Strang 3 3½
Westwood Beauty Shop, 1703 W. 50th.....Kelvinator (Rich-Con.) 1 1

Buildings

Alemeda Tower, 4528 Main.....Frick (B.D.R.) 180 298
I. J. Ringolsky, 4528 Main.....F-M (By Customer) 30 39½
Kelly Oil, 4700 Penn.....Frick (B.D.R.) 85 115
Sears Roebuck & Co. (steam)
15th & Cleveland.....Vilter (Vilter) 635 793

Drug Stores

Bernie's, 1133 Grand.....Westinghouse (Natkin & Co.) 15 19½
Liggett Drug Co., 1120 Main.....Frigidaire (Carter Waters) 15 16½

General Offices & Bldgs.

Balcony Building, 320 W. 47th.....Frigidaire (Carter Waters) 10 12½
Black & Veatch, 4706 Broadway.....Carrier (Gustin-Bacon) 30 40
Carter Waters Corp., 2434 W. Pennway.....Frigidaire (Carter Waters) 20 25
Columbia Pictures, 219 W. 18th.....Westinghouse (Natkin & Co.) 10 12½
Commerce Bldg. (13th floor) 922 Walnut.....Frigidaire (Carter Waters) 10 12½
Employers Reinsurance, 21 W. 10th St.....Airtemp (Flarsheim) 30 37½
Ethyl Gasoline Corp., 1917 Buchanan.....G-E (Gen'l A. C. Corp.) 15 18
Fluor Corp., 105 W. 11th.....Frick (B.D.R.) 10 11½
Harris Upham, 912 Baltimore.....Frigidaire (Carter Waters) 50 60
Hobson McFarland Tractor Co.,
2131 Washington.....Baker (Baker) 10 12½
Dr. R. Lee Hoffman, Professional Bldg.....Airtemp (Flarsheim) 6 6½
Interstate Securities, 1801 Grand.....Frigidaire (Carter Waters) 10 12
Jones and Hettlesater, 405 E. 13th.....Frick (B.D.R.) 10 10½
Joslyn Supply Co., 18th & Iron, NKC.....Airtemp (Flarsheim) 3 3½
Kroger Groc. & Baking Co., 1501 Iron, NKC 25 30
H. D. Lee Co., 2001 Wyandotte.....Airtemp (Flarsheim) 3 3½
Loew's, Inc., 220 W. 18th..... 19½
Meinrath Brokerage, 20 W. 9th St.....Brunner 15 17½
Missouri Portland Cement, 1102 Grand.....Airtemp (Flarsheim) 6 6½
Natkin Engineering Co., 1800 Baltimore.....Westinghouse (Natkin & Co.) 15 19½
Postal Life & Casualty, 4727 Wyandotte.....Westinghouse (Natkin & Co.) 20 25½
Paramount Pictures, 1802 Wyandotte.....Westinghouse (Natkin & Co.) 20 25½
Phillips Petroleum, 4708 Wyandotte.....Carrier (Gustin Bacon) 20 25
Railway Ticket Office, 1029 Grand.....Carrier (Gustin Bacon) 50 62
Ralston Purina, Scott & Rochester.....Frick (B. D. R.) 15 17½
E. H. Roberts Portrait Co., 1000 Holmes.....Frigidaire (Carter Waters) 3 3
Dr. Schopper, Professional Bldg.....Airtemp (Flarsheim) 3 3½
Sinclair Coal Co., 1012 Baltimore.....Westinghouse (Natkin & Co.) 14 23
E. R. Squibb & Sons, 2020 Grand.....Airtemp (Flarsheim) 9 10
Thompson Heyward Chem. Co.,
2915 S. W. Blvd.....Kelvinator (Rich Con.) 9 11½
Twentieth Century Fox, 1720 Wyandotte.....Westinghouse (Natkin & Co.) 15 18½
Upjohn Co., 23 E. Pershing Rd.....Carrier (Gustin Bacon) 15 19½
Western Cas. & Ins. Co., 916 Walnut.....Carrier (Gustin Bacon) 15 18
Whitaker Battery & Supply,
1301 Burlington.....Kelvinator (Rich Con.) 9 10½
Fred Wolferman, 1108 Walnut.....Carrier (Gustin Bacon) 7 9
B & G Hosiery, 2609 Walnut.....F-M (McNamara) 5 5½
Ilg Elec. & Vent. Co., 1003 Wyandotte.....Ilg (Ilg) 2 2

Hospitals

Bell Memorial, 39th & Rainbow.....Kelvinator (Rich Con.) ½ ½
East Side Hospital, 4911 E. 27th.....Kelvinator (Rich Con.) 1 1
Research Hospital, 2300 Holmes.....Westinghouse (Natkin & Co.) 5 8
St. Luke's Hospital, 4400 Mill Creek.....Carrier (Gustin Bacon) 30 37

Hotels

Bellerive Hotel, 214 E. Armour.....York (York) 10½ 16½
Muehlebach Hotel, 1200 Baltimore.....Carrier (Gustin Bacon) 225 335
Pickwick Hotel, 925 McGee.....(By Customer) 15 20
President Hotel, 1331 Baltimore.....Carrier (Gustin Bacon) 90 147

Industrial and Miscellaneous

Nelson Art Gallery, 4409 Warwick.....(Steam) 250 310
Panipius, 2533 S. W. Blvd.....York (York) 1½ 2¼
Standard Brands, 1229 Montgall..... 35 41
Waxide Paper Co., 26th & Tracy.....York (York) 40 65
Eastman Kodak Co., 1010 Walnut.....G-E (Gen. A. C. Corp.) 1½ 1¾

Mortuaries

Freeman Mortuary, 104 W. 42nd.....Baker (Baker) 15 19
Stine & McClure, 3235 Gillham Plaza.....Westinghouse (Natkin & Co.) 40 52½
Wagner Funeral Home, 204 W. Linwood.....G-E (Gen. A. C. Corp.) 15 18

Restaurants & Night Clubs

Barrell Buffet, 301 W. 12th.....Lipman (Gen. Refrig. Sales) 10 11½
Norman Beaman (added), 201½ W. 12th.....Copeland (Copeland) 1 1
Blue Bird Cafeteria, 3208 Troost.....Airtemp (Flarsheim) 6 6½
Bowman, 2014 Main.....Frigidaire (Carter Waters) 7½ 8
Country Club Plaza Grille, 302 W. 47th.....Frigidaire (Carter Waters) 7½ 8½
Fowler's, Inc., 1118 Wyandotte.....Kelvinator (Rich Con.) 4½ 5½
Gleeson, 5700 Troost.....Kelvinator (Rich Con.) 15 18½
Geo. H. Jones, 1827 Grand.....Frick (B. D. R.) 15 21½
Keithley's Grille, 113 W. 12th.....F-M (McNamara) 3 3
Claire G. Martin, 210 W. 47th.....Frigidaire (Carter Waters) 10 10
Plaza Royale, 612-14 W. 48th.....Norge 14 14

Where Installed	Equipment and Installer	Tons	Hp.
Popple's, 6 E. 39th	Westinghouse (Natkin & Co.)	10	12½
Ray's Lunch, 707 E. 12th	Kelvinator (Rich Con.)	4½	5½
Saylor's Grill, 1109 E. 31st	Lipman (Gen. Refrig. Sales)	10	11
Sidney's, 1100 Oak	Airtemp (Flarsheim)	10	12½
Southern Mansion, 1425 Baltimore	Vilter (Vilter)	45	57½
Venice Inn Cafe, 305 E. 12th	Kelvinator (Rich Con.)	9	10½
White Log Tavern, 2627 Main		5	5
White Log Tavern, 1130 Oak	Baker (Baker)	5	6
White Log Tavern, 2627 Main	Baker (Baker)	5	6

Sales Rooms & Shops

Berkson's, 1108 Main	Westinghouse (Natkin & Co.)	6	9
Bond Stores, Inc., 1009 Main	G-E (Gen. A. C. Corp.)	25	34
Brentnal's, 217 W. 47th	Frigidaire (Carter Waters)	3	3
Chasoff, Inc., 1018 Walnut	Airtemp (Flarsheim)	15	22½
Virginia Dare, 6 E. 11th	York (York)	9½	11½
Eastman Kodak Co., 1010 Walnut	G-E (Gen. A. C. Corp.)	7½	8½
Florsheim Shoes, 1008 Walnut	Carrier (Gustin Bacon)	5	6
Gerhardt Fur, 4640 Mill Creek	Howe (Air Control Equip.)	7½	8½
Harzfeld's, 11th & Main	Frigidaire (Frigidaire)	7½	7½
Jay's Dress Shop, 4708 Wyandotte	Westinghouse (Natkin & Co.)	20	25½
Kansas City Gas Co., 9th & Grand	York (York)	5	8
Kelvin Rm. (Rich & Conover)			
5th & Wyandotte	Kelvinator (Rich Con.)	4½	5½
Kline's, 1112 Walnut	York (York)	350	589
Lee Bell Dress Shop, 1016 Walnut	Baker (Baker)	5	5½
Mace's, 1100 Grand	Westinghouse (Natkin Co.)	20	25½
Mangels, 1204 Main	Carrier (Gustin Bacon)	15	17½
Paul's Shoe Store, 1012 Walnut	Westinghouse (Natkin & Co.)	7½	11½
Sally's, 1125 Main	Westinghouse (Natkin Co.)	10	11½
President Shirt Shop, 3101 Troost	Lipman (Gen. Refrig. Sales)	10	11
Shadwell Shops, 128 W. 63rd	Frigidaire (Carter Waters)	5	8½
Thom McAnn Shoe Store, 117 E. 12th	Carrier (Gustin Bacon)	7½	5½
Tiny Tot Shop, 3909½ Main	Airtemp (Flarsheim)	3	3½
Union Clothing Co., 1228 Grand	Westinghouse (Natkin & Co.)	22½	35½
Woolf Brothers, 1028 Walnut	Frick (B. D. R.)	180	385
Shukert Fur Co., 1113 McGee	Frigidaire (Carter Waters)	10	11½

Theaters

Brookside Theater, 63rd & Brookside	Ice (Betz)	57	22½
Private Offices, 47 Installations		65	67½
Residences, 102 Installations		176	195½
Totals, 253 Installations		3,542½	4,792½

Cincinnati & Boston Distributors Named By Utica Heater

UTICA, N. Y.—Williamson Heater Co. has been appointed distributor of Utica air conditioners in the Cincinnati territory, and Buckley & Scott Utilities, Inc., with showrooms in Boston and Providence, R. I., has been appointed New England distributor for these units, according to Carl Sawade, general sales manager, Utica Radiator Corp.

William L. McGrath, vice president of the Williamson organization, has installed a year-around unit in his residence, and a demonstration unit has been placed in the company's downtown showrooms. An installation also has been made in the residence of L. B. Murphy.

Frank E. Kise, head of Williamson's steam department, will be in charge of air-conditioning sales for the company, while G. W. Denges will handle installations.

With the addition of this new line, Williamson Heater Co. is equipped to handle any type of heating and air-conditioning installation, and has the special advantage of manufacturing warm air heating plants and pre-fabricated ducts.

Both Alfred Buckley, of the Providence office of Buckley & Scott Utilities, Inc. and John W. Scott, of the firm's Boston office, are directing the new setup.

Demonstration units have been installed in both cities and sales training is now taking place under the direction of Grant H. Browne, of Utica's New York office.

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Spring Showing Basis of Joint Range Program

Kitchen Bureau, Utilities & Manufacturers Plan for Cooperative Sales Drive

NEW YORK CITY—Plans for the most far-reaching campaign ever held on electric ranges, involving a six-point program including national consumer magazine advertising and a unified "spring showing" period, were announced last week. Backing the drive is the Modern Kitchen Bureau, jointly sponsored by National Electrical Manufacturers Association and Edison Electric Institute.

A previously announced national campaign on electric refrigerators and water heaters will be carried out by the bureau in addition to the electric range drive, it was said.

The six-point program outlined for the electric range campaign includes:

1. A national consumer advertising campaign in six consumer magazines.
2. National electric range "spring showing" period, April 11 to 30, sponsored locally by utilities and dealers, and featured in national magazine advertisements.
3. A special four-page electric range newspaper section, supplied to local newspapers by the bureau.
4. Newspaper advertising mat service, to tie-in with the national magazine advertising program.
5. A national window display contest.

4 'One-Line' Areas Set Up by Utility

MANCHESTER, N. H.—In accord with the general trend toward "single line" appliance merchandising, Public Service Co. of New Hampshire and its affiliate, Twin State Gas & Electric Co. have divided the territory which they serve into four areas and have provided that utility divisions in each of these areas shall handle only one line of major appliances.

The Manchester, Nashua, and Milford divisions of Public Service Co. of New Hampshire will handle the Hotpoint line; the Keene, Hillsborough, Antrim, Newport, and Contooscook offices of this utility will handle the Westinghouse line; the Dover, Rochester, and Somerset areas of Twin State Gas & Electric Co. will handle Kelvinator appliances; and the rest of the state served by these two utilities will carry the General Electric line.

The plan was conceived by Taylor C. Harvey, sales manager of Public Service Co. of New Hampshire, and

Gillis Sees Michigan's Credit Selling Evils as Result of Over-Competition

DETROIT—Two Detroit members of the commission appointed by Gov. Frank Murphy to study credit selling abuses in Detroit and Michigan, and draft remedial legislation, took widely differing views of the situation in interviews last week with staff members of AIR CONDITIONING & REFRIGERATION NEWS.

To Judge Joseph A. Gillis of Common Pleas Court, long-time advocate of installment selling regulation, current abuses are simply the result of too much competition between dealers handling used cars, home furnishings, electrical appliances, and other goods.

Louis A. Miriani of the Detroit Legal Aid Bureau, however, sees the

ASHVE Talks Give New Data About Human Comfort

NEW YORK CITY—Emphasizing the physiological reactions of persons (whether they were comfortable or uncomfortable) under varying conditions of indoor atmosphere with a view to establishing improved standards of air-conditioning practice, the program of the annual meeting of the American Society of Heating and Ventilating Engineers, held last week at the Biltmore here, brought out some fresh views on the matter of human comfort, and how it can be achieved.

There were 16 technical papers presented at the meeting, and six were devoted to analyzing the reasons why people feel comfortable or uncomfortable in their air environment.

Among the conclusions reached in the scientific studies reported were that somewhat higher indoor summer effective temperatures, more economical to produce, are acceptable to persons in the warmer climate zones of the country, and that conversely lower temperatures are more in demand by people in northern sections.

Predicting the practical application of new forms of radiant heat in

\$957,649 Net Profit Reported by York

YORK, Pa.—Annual statement of York Ice Machinery Corp. for the year ended Sept. 30 shows a net income of \$1,284,252 before deduction of federal and Pennsylvania state taxes, leaving a net profit of \$957,649 after depreciation, interest, and taxes (except the undistributed profits tax, exemption from which is claimed).

This compares with a net profit of \$145,701 for the previous year.

Orders booked during the year exceeded the previous year by 31%. Sales closed, including all contracts upon which 85% or more of the work has been finished, experienced a similar rise. Unclosed carry-over of orders booked as of Sept. 30

1937 Cooling Exports Total \$1,672,697

WASHINGTON, D. C.—Exports of air-conditioning equipment by U. S. manufacturers during 1937 totaled \$1,672,697, compared with \$883,165 during all of 1936, according to a report by the machinery division of the U. S. Department of Commerce.

Industrial refrigerating equipment exports during the year totaled \$1,328,020, compared with \$889,123 in 1936.

problem of regulating installment selling abuses as a many-sided issue, involving legal, social, and ethical questions.

Re-emphasizing that his condemnation of credit selling evils should not be taken as an indictment of installment selling practices as a whole, Judge Gillis pointed to the results of over-competition between used car, appliance, and home furnishings dealers as typified in cases which came between him in the conciliation division, or "poor man's court," over which he presides.

Instances are common, he said, in which the used car, electrical appliance, or other goods had been sold

Dealers Trying To Organize on National Scale

Brooklyn Association Is Inviting Other Groups To March 7 Meeting

NEW YORK CITY—Representatives of some 30 electrical and appliance dealer associations throughout the country are scheduled to meet here March 7 to discuss the advisability of forming a national association, according to William H. Ingersoll, legal advisor of the Electrical Appliance Dealers Association of Brooklyn, Inc., sponsor of the national movement.

If the proposal is favorably received, officers of the national group may be elected and organizational plans formulated at this meeting, Mr. Ingersoll declared.

Russell Atkinson, Brooklyn appliance dealer and former president of the Brooklyn association, and B. H.

Resting Was Hotter Than Working, So Clerks Gave Up Vacation

ROCKFORD, Ill.—Salesmen can add this "believe-it-or-not" testimonial as to the value of an air-conditioning system in retail stores to their selling ammunition for the coming summer season:

Last summer, two clerks in the Weise department store here bade farewell to their less fortunate colleagues, expectantly set out for a week's vacation at a summer resort on a Wisconsin lake.

Two days later, to the amazement of those left behind, the two clerks reappeared at the store, asked to be taken back to work. Weather at the lake, they explained, was too hot—it was more of a vacation for them to keep on working in the department store's air-conditioned surroundings.

New Technology in Food Refrigeration Studied by ASRE

NEW YORK CITY—That future progress in the mechanical refrigeration industry, both technically and commercially, rests in a better understanding and increased use of refrigeration as applied to food technology and industrial processes, was the impression gained from the annual midwinter meeting of the American Society of Refrigerating Engineers, held last week at the Roosevelt hotel here.

Emphasis on the relation of refrigeration to food preservation, particularly with respect to new uses of cooling in food processing, transport, and storage, was again a feature of discussion at last week's meeting, as it was at the spring meeting at French Lick, Ind.

This trend will be given more attention at the 1938 Spring meeting which will be held starting June 20 at State College, Pa. This spring meeting will be held in conjunction with a food technology conference, and a full week's program has been planned, embracing both the technical aspects of refrigeration and its

\$2,000,000 Expansion Planned by Norge

MUSKEGON, Mich.—Announcement of a \$2,000,000 expansion program and the rehiring of several thousand employees was made here last week by Howard E. Blood, president of Norge division of Borg-Warner Corp., and Harry L. Spencer, Muskegon plant manager.

Of this sum, \$800,000 will be spent on the Muskegon plant and the remainder on the Detroit plant, it was said; \$400,000 will go for a new building at Muskegon, and an equal amount on equipment and modernization of the present plant here.

Plans also include the return of 3,100 workers to the Muskegon plant on Jan. 31, it was said. Peak employment of 4,500 is expected later in the year.

Grunow Shows Gas Models of 'Thermene' Line

Company Producing Only Gas Units Now; Electric Models Due Later

CHICAGO—First models of General Household Utilities Co.'s line of "Thermene" system household refrigerators were introduced last week to 150 representatives of distributors, prospective distributors, and utility companies, in a two-day convention in the Sherman hotel.

Three modernly styled models were shown, all designed to be operated from natural or manufactured gas mains, or with bottled gas. Sizes and list prices were:

Model 558G—5½-cu. ft. capacity, 11 sq. ft. shelf area, list price \$169.50; model 658G—6½-cu. ft. ca-

A detailed illustrated description of the operation of the new Grunow Thermene refrigerating system will be published by the News in an early issue.

capacity, 14.2 sq. ft. shelf area, list price \$199.50; model 758G—7½-cu. ft. capacity, 17.5 sq. ft. shelf area, list price \$219.50. All models have ice capacity of 6 lbs. per freezing. Prices are f.o.b. factory.

With introduction of the "Thermene" units, the company has discontinued the manufacture of its former line of vacuum pump electric models.

Mechanical unit of the refrigerator can be operated by electrical

\$22,500 'Electric' Home Going Up in Cleveland

CLEVELAND—A \$22,500 home, said to be the "most completely electrified home in America," is being constructed in the Rockefeller-Forest Hill estates in Cleveland Heights by Keyes-Treuhart Co. Charles Hinman is the architect. General Electric Co. engineers are cooperating with the builders in a consulting capacity.

In this house electricity will preserve and cook the food, wash and dry the dishes, dispose of kitchen food wastes, heat the water, and regulate both temperature and humidity throughout the year. It also will wash, dry and iron clothes,

Universal Cooler Loses \$75,106 in Quarter

DETROIT—Universal Cooler Corp., for the first quarter ended Dec. 31, 1937, reports a loss of \$75,106.62 after all charges, as compared with a loss of \$62,150.05 for the same quarter in the preceding year.

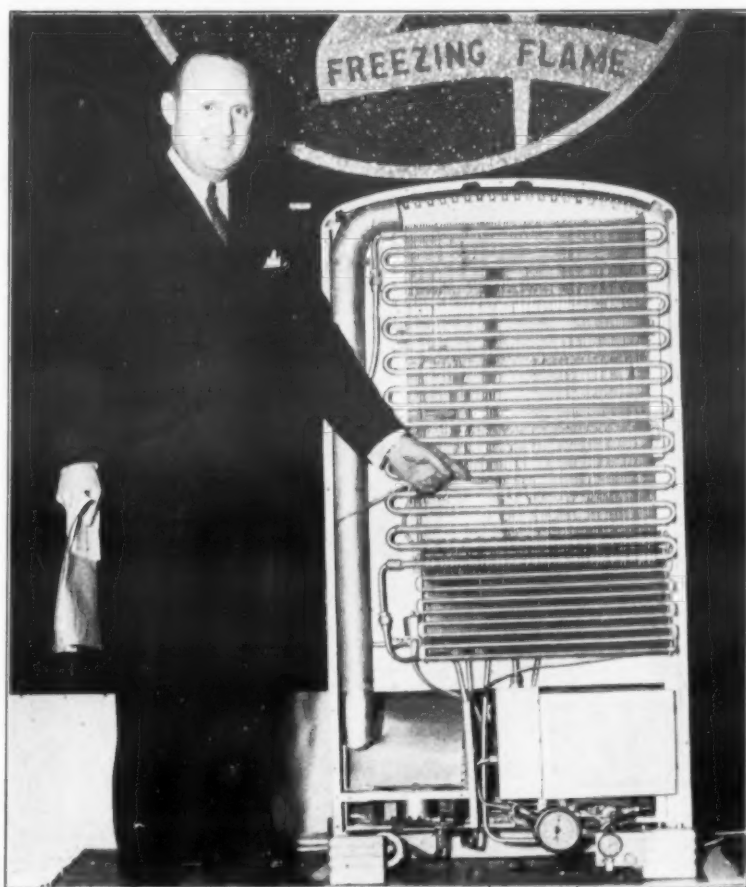
Sales for the first quarter show an increase of 12% over the same period of last year, declares F. S. McNeal, president.

Harry Williams Resigns Post at Frigidaire

NEW YORK CITY—Harry M. Williams has resigned his position as manager of the commercial engineering department of the Frigidaire division of General Motors Corp. to become chief engineer of the National Cash Register Co., he announced to friends at the annual meeting of the American Society of Refrigerating Engineers here last week.

Mr. Williams, a veteran refrigeration engineer, is the retiring president

The 'Works' of Grunow's 'Thermene' Refrigerator



James J. Davin, sales promotion manager of General Household Utilities Co., points out the working mechanism of the new 'Thermene' refrigerator. Operating on gas heat, this unit utilizes the adsorptive power of activated carbon.

Abuses in Credit Selling Cited by Gillis As Possible Cause of Business Slump

(Concluded from Page 1, Column 2)
to the purchaser without any down payment at all, with the customer merely laying enough money "on the line" to cover the state sales tax.

Repossessions, numerous under ordinary circumstances in connection with this haphazard type of credit selling, have multiplied greatly during the recent "recession" months, Judge Gillis declared.

"As soon as a man gets out of work," the judge added, "most of these companies are quick to repossess their merchandise when the purchaser falls behind in his payments. Then they 'sell' the goods, under a pre-arranged agreement as often as not, and sue for a deficiency judgment against the original purchaser."

"Not understanding the law in cases of this sort, and figuring that, anyway, the value of the merchandise repossessed is equal to the unpaid balance against him, the purchaser usually ignores his summons to appear in court and state his case. Next thing he knows, he's under a deficiency judgment—and he may spend a year or more making payments on something he has had the use of for only a few weeks."

Properly administered, instalment selling has made possible many things—mass production, mass buying, and the enjoyment by the average worker of many things he otherwise might never be able to afford, Judge Gillis went on. Out

of control, however, the practice not only may lead into business slumps, but also lengthen considerably the period spent in trying to get out of them, he believes.

For instance, he continued, the worker who has been able to save \$20 a month thinks he might as well be putting this money into a good used car. He knows he might be laid off before the car is fully paid for, but believes that, if it should be repossessed, it will be worth at least the amount of the unpaid balance.

Business slacks up in the factory where he's working, and the lay-off comes. The credit company calls up for its payment, and he tells them he's out of work, and to come and get the car, if they want it. They pick it up, and he considers the incident closed. But it isn't, Judge Gillis' records reveal.

Too late, he finds that his car was "sold" for a good deal less than he still owes on it, and that he is under a deficiency judgment for the balance.

Then what happens? Just this, says Judge Gillis:

"It all works in a vicious circle. All the money the purchaser can get his hands on is going to the credit company. He used to be able to get around a bit in his car, see shows, look at furniture and other new things. He had to buy gas and oil, to keep the car running."

"Now he does none of these things.

He might be interested in getting a new refrigerator or range, but he knows it's no use even to shop—he can't afford it.

"He has to eat, and he has to have a place to live in—but he stalls the grocer, and the landlord, and the doctor and all his other creditors off as long as he can. All the cash he has goes to the finance company, and the others do without."

"And all this for something he's had use of for perhaps a few months, perhaps even less. He's paying for something he hasn't got, and the legitimate business men have to wait for theirs."

So business in general suffers, believes Judge Gillis, and what may have started out as a mere dip in the business cycle plunges on down into a real toboggan.

In thousands of cases now in his court, he added, people are paying for goods long since repossessed and now probably being used—and paid for—by some one else. And one of the most vicious things about the practice, he believes, is that it is employed, for the most part, against people who know the least about their own rights, and who can least afford to fight for them.

In summing up his views of the problem of regulating credit selling abuses, Mr. Miriani, who as head of the Legal Aid Bureau sees many such cases cross his desk, said that legislation aimed at settling the question might well be supplemented by voluntary cooperation between the parties involved.

"The tendency of government to curtail and prohibit the functions of business should not be extended further, if it can possibly be helped," he said, pointing out that rigid statutory provisions governing in-

stalment selling might reduce the number of cases of flagrant abuse, but at the same time might place a heavy burden on the legitimate business man.

Basically, Mr. Miriani said, any regulation should cover certain broad principles, four of which are:

1. Deficiency judgments should be awarded only when the plaintiff is able to show that the true value of the article repossessed was less than the balance due on it, at the time of repossession. Burden of proof should rest with the plaintiff; the law should presume that the article was equal in value to the balance due, unless the plaintiff proves otherwise.

2. The "wage assignment" law should have the prior knowledge and consent of employers, so that the employee is not permitted unwittingly to sign away his right to livelihood.

3. Garnishment should be regulated on the basis of percentage of income, for married and unmarried men, rather than by an arbitrary provision allowing the garnishee \$15 per week, as at present, on which to support his household.

4. Future purchases on instalment contracts should be treated as new contracts. This would prevent articles purchased previously on instalment and paid for from being repossessed along with goods which actually are in default, in the case of "add-on" credit sales.

38,837 Units Sold in Cleveland in 1937

CLEVELAND — Distributor sales of household electric refrigerators in the Cleveland territory during 1937 totaled 38,837 units as compared to 33,556 units in 1936, an increase of 5,281 units or 15.7%, according to figures released to distributors by the Electrical League.

Distributors' sales to dealers in the Cleveland area during December showed a decrease of 12.2% in 1937 as compared to December, 1936, the league's report to distributors shows.

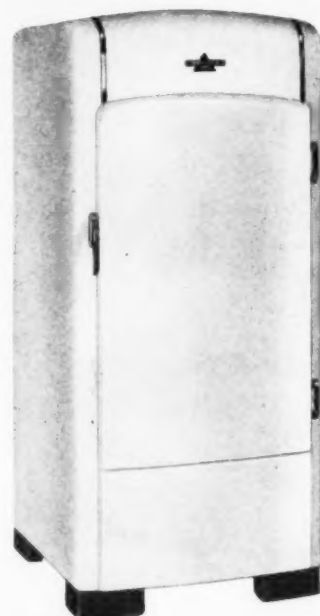
However, last quarter sales for 1937 showed an increase of 2.57% over the last quarter of 1936.

Harry Williams Quits Frigidaire Post

(Concluded from Page 1, Column 5)
dent of the A.S.R.E. He started his career with Frigidaire as a chemical engineer, and recently has served as manager of the standards division as well as manager of commercial engineering. He holds a number of patents in refrigeration, chemical, and metallurgical fields.

Mr. Williams had worked for National Cash Register once before, in the early part of his career.

New Model Added To Superfex Line For 1938



CLEVELAND—A model of new size and design has been added to the line of Superfex oil burning refrigerators for 1938, and prices on existing models have been lowered, according to announcement by Perfection Stove Co.

The new model, of 6-cu. ft. capacity, will be ready for shipment April 15. Other models, of 5, 6.8, and 8.3-cu. ft. capacities, are being carried over from the company's 1937 line.

Known as model K-1600, the new unit has the same refrigeration principle as its mates, but is of new and more attractive design. Instead of having the condenser tank on its top, and burner compartment at the side, as in the three other Superfex models, the new model has its burner compartment at the rear, with the condenser tank concealed inside the modern styled cabinet.

In this condenser, the heated refrigerant is cooled by both air and water, without requiring running water, it is claimed. Burners, it is said, are kept lighted only two hours to provide 24 hours of refrigeration.

Burner compartment, at the rear of the cabinet in the new model, has thoroughly insulated walls and also air insulation separating it from the food compartment. Access to the burners is through a hinged drop door at the front. Burners are mounted on a slide which swings forward for lighting, facilitating outdoor filling of the oil reservoir.

Model K-1600 has 6 cu. ft. of food storage space, and ice cube capacity of 107 cubes per freezing.

INCREASE CABINET EFFICIENCY - SPEED ASSEMBLY WITH

Armstrong-Corning WOOL

Resilience and Easy
Handling Make This
Efficient Insulation
a Favorite

ON whatever basis you choose insulation, you'll find plenty of reasons for selecting Armstrong-Corning Wool. This new cabinet insulation is, first of all, highly efficient. Its low coefficient of thermal conductivity, and permanent resistance to moisture, help to build long, efficient life into cabinets.

Another big advantage of Armstrong-Corning Wool is its ease of handling. It can be put in place quickly and accurately, and its flexible forms permit it to fit snugly against the crock. The extreme resilience of this fibrous glass insulation causes it to constantly tend to expand and fill all available space. This resilience is due to long, springy fibres which expand instead of settling under vibration.

Armstrong-Corning Wool combines light weight with economy and long life. It is made from molten minerals, spun into fine, soft threads. It is inorganic and has all the chemical characteristics and the permanence of glass.

Armstrong Offers Complete Line

In addition to Armstrong-Corning Wool, Armstrong offers a line of insulating materials that adequately meets all construction and service requirements. Armstrong's



ON THE ASSEMBLY LINE, these renowned bats of Armstrong-Corning Wool are easily and accurately applied and help to speed up production.

LK Corkboard is highly efficient, long-lasting insulation, especially suited for severe service and low temperatures. Armstrong's Temlok is a rigid fibreboard that is strong, efficient, and space-saving. Together with the new Armstrong-Corning Wool, these materials offer

a range of selection that can furnish just the right insulation for the type of cabinet you build.

For new illustrated booklet and samples, write today to Armstrong Cork Products Co., Building Materials Division, 1002 Concord St., Lancaster, Pa.



Armstrong's EQUIPMENT INSULATION

LK CORKBOARD - TEMLOK INSULATION - ARMSTRONG-CORNING WOOL INSULATION

The "all-porcelain" refrigerator is far
and away the most beautiful, most
durable, most dependable and
most profitable refrigerator
—not only for those who
make and sell but
for those who
buy and use.

PORCELAIN ENAMEL INSTITUTE, INC.
612 NORTH MICHIGAN AVENUE • CHICAGO

IT'S CLICKING- RIGHT DOWN THE LINE!

**SALESMEN FIND THE 1938
LEONARD STORY TOPS ANYTHING
IN REFRIGERATION HISTORY FOR
CLOSING THOSE SALES!**



Salesman ANDREW HAM, American Furniture Co., Newark, N. J., finds his prospects intensely interested!

GET THIS STORY...and get it NOW! It's the smash hit of the year in refrigeration.

Everything about Leonard for 1938 is *hot*... if you see what we mean.

The product itself is a refrigerating wonder... with new power, economy and **VALUE FEATURES** that make it the stand-out electric refrigerator in plenty of years.

Six hundred and nine homes—in 48 states—tested it for nearly a year before announcement. *Proved* things you ought to know about!

FIND OUT about: Leonard's new, silent, sealed "Glacier Unit"... its sensational "Ice Popper"

cube release... the new "Zero-Freezer"... the magical "Food Fit" shelves... a big, new idea in adjustability... the famous "Master Dial"... the "Len-a-dor" pedal... and all the rest of **THE BIGGEST BARGAIN IN REFRIGERATORS TODAY!**

Advertising Just As Hot!

This year's national advertising on Leonard is planned, built and aimed at just one thing: **POURING STORE TRAFFIC IN THROUGH EVERY DEALER'S DOORS!**

It uses a sure-fire plan to do this... a \$9,500 **PRIZE CONTEST** that begins, centers and ends in *each dealer's place of business.*



THIS WILL PULL 'EM IN! The surest-fire kind of popular contest... tied tight to your store.

On top of that there's a newly tuned-up, keyed-up, *powered-up* **PLAN** FOR EACH INDIVIDUAL DEALER'S ADVERTISING.

And on top of *that*... a complete, tied-up "bundle" of the hottest **SALES-MAKING, ORDER-CLOSING HELP** you ever had working for you.

Cut Yourself a Slice...

Maybe this will fit into your own plans for more volume, and a more profitable year, in 1938.

WE BELIEVE IT WILL... AND DOES!

And one thing is absolutely certain: **YOU OWE IT TO YOURSELF AND YOUR BUSINESS** to get the whole, big, red-hot story... and get it *now* before the parade marches on by! Put the bee on your Leonard Distributor... or put it up to us here at the factory.

LEONARD, Division of Nash-Kelvinator Corporation, Detroit, Michigan.



600

LIKE HER

**WROTE THE 1938
LEONARD STORY!**

**GREATEST STORY
ANY REFRIGERA-
TOR MANUFAC-
TURER EVER HAD
TO TELL**



**YOU CAN GO
TO TOWN ON!**

**GREATEST STORY
ANY DISTRIBUTOR
EVER GAVE
HIS WHOLESALE
MEN**



**THIS ONE IS A
NATURAL!**

**GREATEST STORY
ANY WHOLE-
SALE MAN EVER
HAD FOR HIS
DEALERS**

BLAZING HOT! The 1938 Leonard story is the greatest any manufacturer of refrigeration ever had... or any distributor ever

told his wholesale men... or any salesman ever put before a dealer... or any retail salesman ever had to close his sales!

LEONARD

*"Biggest Bargain in
Refrigerators Today"*

Range Sales Drive Opens with Joint Showings in April

(Concluded from Page 1, Column 1) test, with \$1,200 in awards, for utilities, department stores, and dealers.

6. A variety of sales promotional materials for use by retailers.

Advertisements to be used in the campaign have been designed to imply that women are retaining "old-fashioned" methods of cooking because they fear that electric ranges are too slow and too expensive.

"I Kissed a Spook Goodbye" is the theme of the first advertisement, which pictures the housewife gaining new freedom by ridding herself of the "spook of slowness" and the "bogeyman of cost."

Each of the three campaigns, it was said, will be meshed into the bureau's underlying program—selling the idea of the modern "all-electric" kitchen.

Manufacturers cooperating in the electric range program, whose names will be mentioned in all consumer advertising, are:

Edison General Electric Appliance Co., Inc.; Electromaster, Inc.; General Electric Co.; Estate Stove Co.; Frigidaire Division, General Motors Corp.; A. J. Lindemann & Hoverson Co.; Malleable Iron Range Co.; Kelvinator Division, Nash-Kelvinator Corp.; Norge Division, Borg-Warner Corp.; Roberts & Mander Stove Co.; Walker & Pratt Mfg. Co.; Westinghouse Electric & Mfg. Co.

'One-Line' Appliance Policy Started by Hampshire Utility

(Concluded from Page 1, Column 1) put into operation by the utility in the belief that the single line principle of merchandising would simplify the utility's buying problem and also would aid the manufacturers in selling their complete lines to leading retailers.

In the past, utilities and other large retailers have stocked and sold similar items of electrical merchandise produced by a number of different manufacturers. This situation was due largely to the fact that most appliance manufacturers started in business as specialists in one item, such as ranges, refrigerators, or washers.

In the course of time these manufacturers have kept adding to their lines until at least six companies now are able to offer complete appliance lines. But while this expansion was taking place among manufacturers, few dealers found it possible to regulate their buying so as to stock only equipment produced by one manufacturer.

Public Service Co. of New Hampshire is now attempting to solve this problem through dropping some lines and concentrating efforts on one complete line in each territory.

In an open letter to the utility's customers which appeared in several local newspapers, J. Brodie Smith, vice president and general manager of Public Service Co. of New Hampshire, reassured those who had al-

ready purchased from the utility any of the makes of appliances which the company was relinquishing by informing them that the utility would maintain the full mechanical service guarantee on such appliances. In conclusion, Mr. Smith stated that "In making this step, we have gone forward with the modern trend of single line merchandising."

Local Dealer Groups To Study National Association Idea

(Concluded from Page 1, Column 3) Poucher, secretary of the Philadelphia dealers association, who have been instrumental in promoting the meeting, have suggested that the association representatives establish definite policies regarding the following 10 points:

Price structure of electrical appliances; industrial selling by jobbers; discount courtesy cards; cooperative buying groups; cruises and "spiffs"; control of production by manufacturers; enforcement of fair trade legislation; cooperation in legislative matters; advertising and trade-in allowances; establishment of a clearing house for trade information.

Mr. Poucher, secretary of the committee in charge of the national meeting, has announced that invitations will be sent to all dealer associations of which his committee is aware. Officers of any associations not receiving such invitations are urged to communicate with him immediately at his office in the Architects building, Philadelphia.

At the Grunow Thermene Unit Inaugural



(1) W. M. Wilson, Los Angeles distributor, looks pleased over 1938 prospects as he discusses the new product with W. T. Schenk, his star salesman (left), and M. W. Thompson, General Household Utilities Co. advertising manager.

(2) "We think we've got something there," chorus Distributors H. H. Hanson of San Francisco, Francis Stern of Hartford, and Stuart Lou-

cheim of Philadelphia.

(3) E. L. Bozarth of Hughes-Bozarth-Anderson, Grunow distributorship in Oklahoma City, insisted upon getting his order in first, because his is a natural gas territory. His sales manager, C. A. Lindevall (left), looks on as Grunow District Manager V. P. Finger points out the dotted line.

Operating Cycle of 'Thermene' System Explained to Grunow Distributors

(Concluded from Page 1, Column 5) heating as well as by gas, it was explained at the convention, but present production is being confined to gas models. Electrically heated models will be announced later.

Explaining the new refrigerating system to distributors and utility men, Dr. J. D. Jordan, research engineer of General Household Utilities Co., said:

"We utilize the suction, or adsorptive, power of 'activated' carbon to pull Carrene out of the evaporator and secure refrigeration. No chemical change takes place, as carbon is indestructible below 2,000°, and Carrene does not break down at the temperature we use.

"Briefly, we have a short but powerful refrigerating period, a quick, even heating of the activated carbon pack, and a fast cooling of the carbon. This trio of operations completes a cycle, and the carbon is again ready to pull Carrene."

Carbon pack is "steam heated" by Carrene steam from a small low-pressure boiler, he explained, and during the heating period of the cycle, Carrene steam is by-passed directly back to the boiler. This heating of the carbon pack releases the refrigerant held by the carbon, it goes to a small condenser where it is returned to liquid form, and then to a liquid receiver, from which it is metered to the evaporator.

While the heating has been going on, a moderate quantity of refrigerant has been held, cool, up in a second condenser. Automatic controls shut off the gas at the proper time, eliminate the by-pass in the heating-cooling system, the cool Carrene drops down into the pipes of the carbon pack for the fast cooling essential to the system, and

the steam refrigerant is returned to the liquid state, Mr. Jordan concluded.

Welcoming distributors to the meeting, Harry Alter, president of the company, reviewed the advantages of entering the gas refrigeration field, and told of General Household Utilities Co.'s position.

W. C. Grunow, chairman of the board, paid tribute to the corps of engineers whose work had resulted in development of the "Thermene" system.

Advertising Manager M. W. Thompson reviewed the material necessary to efficient advertising and sales promotion work in the refrigeration field, and told what items would be available for distributor use at once, and the order in which others would be made available.

Promotional and advertising materials will be modern, in keeping with the styling of the refrigerator, Mr. Thompson said, and will be designed to attract readers from the "news" angle—a refrigerator that is "silent, free of moving parts and service trouble, and priced so that those with incomes below \$2,000 a year can buy."

National magazines, newspapers, trade papers, and other media will be used in the merchandising plan, the company has in mind, Mr. Thompson said.

J. J. Davin, sales promotion manager, presented facts designed to show distributors that, during this year at least, they could find markets for all the refrigerators the company could make, in their primary and secondary trading centers alone. He urged close cooperation with gas companies.

1938 POSES THESE QUESTIONS



- ★ Will the refrigerator insulation you use this year have everything that contributes to customer satisfaction?
- ★ Will it be the most practical and economical insulation for YOU?
- ★ Will it be the kind of insulation that is fully adaptable to changing requirements and conditions?

BALSAM-WOOL FIBRE SEALED SLABS GIVE THE RIGHT ANSWERS



- ★ Use in more than 3,700,000 refrigerators has shown that Balsam-Wool is the ideal refrigerator insulation . . . odorless and sanitary . . . moistureproof . . . non-settling . . . permanent and high in efficiency.
- ★ Balsam-Wool Fibre SEALED Slabs are more economical and practical, because they are fabricated on special licensed machines in the plant of the refrigerator manufacturer. You save in floor space—in inventory—in freight costs.
- ★ At a moment's notice, you can change the size or shape of the Balsam-Wool Fibre SEALED Slabs you need. That means greater flexibility in meeting changing demands—greater protection for you.



NO OTHER INSULATION IS USED IN SO GREAT A VOLUME FOR DOMESTIC REFRIGERATORS AS BALSAM-WOOL FIBRE SEALED SLABS. WRITE US FOR COMPLETE INFORMATION!

WOOD CONVERSION COMPANY
Refrigerator Sales Division

360 North Michigan Avenue, Chicago, Illinois
St. Paul, Minn. New York, N. Y.

BALSAM-WOOL
FIBRE SEALED SLABS
PRODUCT OF WEYERHAEUSER

HERE IS THE FIRST OF A SERIES OF GENERAL ELECTRIC 24-SHEET POSTERS THAT WILL APPEAR IN FULL COLOR ON THE NATION'S BILLBOARDS



THAT'S THE ONE TO GET!
YOU SAVE 3 WAYS!

GE 1938
Triple-Thrift
REFRIGERATOR

SEE YOUR GENERAL ELECTRIC DEALER

*New Models!
New Features!*

—AND G-E IS THE ONE TO SELL!!

Never before could you offer so much General Electric Refrigerator for the money! Never before have General Electric dealers had so much to *shout* about! New General Electric Triple-Thrift models are thriftier and have more convenience features than ever before. And they are popularly priced!

New quick-releasing, fast-freezing ice cube trays. Full-width sliding shelves, adjustable in spacing. New sliding drawers for fruit and vegetable storage. New stainless-steel super-freezer with removable shelf. One-button temperature control and defrosting switch. Thermometer. Interior Light. Chiller Tray. Finger-tip Latch. Matched set of refrigerator dishes. Water flask. Many of these advanced convenience features are standard on all 1938 General Electric models.

"Save Three Ways—through bigger dollar-for-dollar value—lower current cost—and long life"—that's what you can tell prospects about the new 1938 G-E Triple-Thrift Refrigerator! The G-E is first choice of millions. It's popularly priced. It's backed by 60 years of electrical experience—by greater sales support than ever—*plus* the acceptance value of the greatest name in electrical manufacturing. Last year America bought more General Electrics than ever before, and this year's G-E is even a bigger value than ever. That's the kind of a line to sell! See the General Electric distributor TODAY.

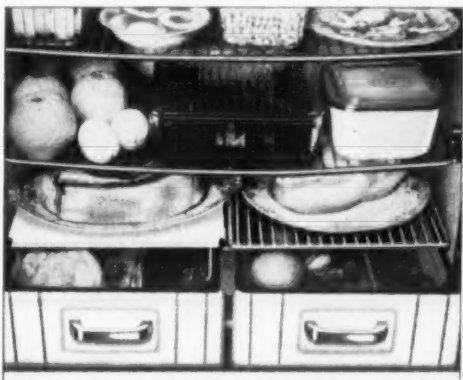
General Electric Company, Specialty Appliance Division, Nela Park, Cleveland, Ohio.



New! Quick Releasing, Fast-Freezing Ice Cube Trays. Two cubes or a trayful can be released in a jiffy with new release lever!



Full Width Sliding Shelves, adjustable in spacing to accommodate odd sized foods and containers. Removable Split Bottom Shelf.



New! Sliding Drawers for fruit and vegetable storage. Keeps green-stuffs crisp, fresh, moisture-conditioned.



Oil Cooling! Sealed-in-Steel Monitor Mechanism with Oil Cooling assures quiet operation, low current cost and *enduring* economy.



General Electric Refrigerators, Ranges, Electric Sink with Dishwasher and Disposall, Water Heaters, Washers, Ironers, "Packaged" Commercial Refrigeration Products.

The COMPLETE line of electrical home appliances—every one proved by performance, tested by time. "Go to Town" on the Mainline in 1938. It's *another* G-E year!



General Electric Range with Tripl-Oven, Hi-Speed CALROD Cooking Units and many advanced features. 15 models—priced for every income.



General Electric Sink with Dishwasher and Disposall. Washes the dishes, disposes of food wastes—*electrically*. It's your next big sales opportunity!

GENERAL  ELECTRIC

Specialty Selling Ideas

'Audichron' (It Gives Phone Time Service) Is Used by Dealer as a Promotion Medium

COLUMBUS, Ohio—Through the use of an "Audichron" machine which answers more than 13,000 telephone inquiries every 24 hours, Robinson's, Inc., local Kelvinator dealer, gets its name known throughout the city and greatly increases its list of prospects, according to owner C. C. Robinson.

The Audichron is a "two-units-in-one" machine, which, by a double sound track, automatically answers persons who telephone requests for the correct time. It gives the exact time, and also makes a brief announcement to the effect that the service is provided by Robinson's.

The two units in the machine alternate on six-hour shifts. If, while in operation, one of them breaks down, the machine automatically switches to the other unit.

An indicator bulb is mounted on each unit, and every flash represents from 1 to 14 calls, said Mr. Robinson. The Audichron is connected to 14 trunk lines, and can answer 14 calls in seven seconds.

Direct connection with the Ohio Bell telephone exchange, adjacent to Robinson's, facilitates operation of the Audichron, Mr. Robinson explained. Telephone calls on any one

of the 14 trunk lines with which the machine is linked go directly to the Audichron instead of being routed through the central exchange.

Robinson's Audichron is the eighth to be installed in the United States, Mr. Robinson stated. Manufactured by the Audichron Co. of Atlanta, the machines are distributed by the Coca Cola company on a rental basis.

The Audichron's value as a prospect-getter is becoming more generally appreciated by store owners, Mr. Robinson said.

N. H. Public Service Workers Do Demonstration Job

MANCHESTER, N. H.—To create added interest among housewives in electrical appliances, several public utilities of New Hampshire are delegating representatives to give demonstrations before women's clubs.

Miss Hattie Smith, of Twin State Gas & Electric Co., recently presented a demonstration at a meeting of the Barrington women's club. J. C. Taft, Greenville Electric Lighting Co., supervised a showing there.

Puzzle Contest with Cubes Proves Fine Prospect Developer

SPRINGFIELD, Ohio — About \$1,500 worth of electrical appliances was sold in three days by Steinmetz Appliance Co. here as a direct result of a puzzle contest which drew approximately 2,600 entries, according to H. E. Payne, sales manager.

First prize in the contest was a washing machine, and the lesser prizes were credit vouchers applicable to purchases of other appliances from the Steinmetz company.

Announcement of the contest was made through an advertisement in the Springfield News-Sun, which has a circulation of about 18,000. The contest extended over a period of six days.

Basic requirement of the contest was the arranging of seven cubes with numbered edges into a pattern so that adjacent numbers corresponded with each other.

Prizes were awarded according to correctness, uniqueness, and originality. One of the entries which won a credit voucher was in the form of a miniature washing machine, with the correctly joined block of cubes pasted on the underside of the removable lid.

Credit vouchers contained void clauses setting a three-day limit on their validity.

Mr. Payne said that the puzzle contest proved so effective as a prospect-getter that the Steinmetz company intends to sponsor more similar contests at reasonable intervals.

This 1938 G-E Kitchen Comes Complete



CLEVELAND — General Electric has introduced for 1938 an improved unit kitchen with several developments for greater flexibility, utility, and beauty.

General Electric cabinets are produced in the modern General Electric refrigerator cabinet factory in Erie, Pa. The baked glyptal finish over bonderized metal is the same as used in G-E refrigerators.

In addition to the standard sections of top storage cabinets molding strips, wall panels, and base units for appliances or drawers, General Electric unit kitchens for

1938 include: a complete 12-inch section for greater flexibility, top storage cabinets to fit above all sizes of refrigerators; full-height broom cabinet; full-height utensil cabinet; and accessories for closed corner section treatment.

Among the exclusive features are: automatic interior lighting of top storage cabinets; positive spring-action doors; light strips and outlets; and black acid-resistant porcelain work surface. Other features are: work tops for local linoleum installation; silent sliding drawers; chrome trim and hardware.

Frigidaire 1938 Advertising Stresses Value Of Refrigerator in Times of 'Recession'

DAYTON—Shoving its 1938 advertising schedule ahead somewhat, Frigidaire division, General Motors Sales Corp., now plans to launch on Feb. 22 an intensive advertising program through the combined mediums of magazines, newspapers, radio, billboards, and window displays, according to Lee A. Clark, household advertising and promotion manager.

The entire program will be centered around improvements in Frigidaire design which make for greater economy and convenience of features. Theme of the campaign—"Save all four ways, or you may not save at all"—will outline the four principal sources of savings claimed for the new Frigidaire, namely current, food, ice, and upkeep.

Prospects will be urged to "See Frigidaire first and save," and it will be emphasized that Frigidaire, being a purchase that literally pays for itself, is an excellent investment, especially in times of "recession."

Illustrations in the advertising will feature the "quickube" tray, the "meter-miser," and the cabinet.

The magazine campaign, placed through Lord & Thomas, Chicago, has been developed to cover every type of refrigerator market, and will include black-and-white and full-color spreads and pages in the following publications:

Saturday Evening Post, Collier's, American, Woman's Home Com-

panion, Good Housekeeping, McCall's, Ladies' Home Journal, Holland's, Better Homes and Gardens, Liberty, American Home, Life, True Story, Household, Electricity on the Farm, and 40 publications of the Graduate group (which are publications issued by graduate schools of various universities).

The national, factory-placed newspaper schedule calls for newspaper insertions in the ranking trade centers in the country. Newspaper advertisements for placing by dealers, with factory cooperation, also will be supplied.

The billboard campaign, also national in scope, will break March 15, and will feature the slogan "See Frigidaire first and save."

The "four-way savings visualizer," closing weapon designed to dramatize the four-way savings theme, consists of a show-room replica of a large money bag. This bag has four gateways of possible loss. When any one of the gates is opened, the expected savings pour out in front of the prospect.

Rounding out the list of sales aids are window displays, showroom exhibit materials, localized spot radio announcements, a full-color broadside for house-to-house distribution or direct mail use, consumer literature, and slide films with and without sound, which may be shown in the prospect's home as well as in the showroom.

Miami Leonard Dealer Holds Sales Contest

MIAMI, Fla.—To get its refrigerators installed in every section of the city, Major Sales Appliances, Inc., local Leonard dealer, staged a month's sale campaign in which prizes of \$50 and \$20 were awarded to the two salesmen bringing in the largest number of new accounts.

"The campaign was not operated on a dollar basis," explained W. D. Rowlands, president, "but strictly on the number of units sold. The more refrigerators in use, the more apt a prospect is to know some friend who has recently installed one, and we can refer her to the satisfaction expressed by her friend with her new refrigerator."

High Sales Marks Set In Ga. Power Drive

ATLANTA—Here are some high-light sales happenings during Georgia Power Co.'s recent 12-week "Home Stretch" campaign on electric ranges and water heaters, during which 1,751 ranges and 1,173 water heaters were sold.

The company's Decatur store sold 290 ranges and water heaters; the Rome division sold 300, and the Athens division 297.

Frank Hayley, Decatur, sold 68 ranges and water heaters, the most units of any individual salesman in the campaign; O. H. Layfield, Brunswick, sold 64 units; F. A. Baker, Brunswick, sold 56; and M. F. Wilson, Decatur, sold 55.

— AN UNUSUAL OPPORTUNITY — Design and Sales Engineer

A leading midwest electrical manufacturer is seeking a man with a refrigeration background to further develop and market commercial refrigeration switches, valves and related accessories. Trade acquaintance, past and present trends in these lines, ideas and initiative absolutely necessary. Only replies indicating these qualifications will receive attention. State salary expected, age, and give your complete story in first letter.

Box 1016, Air Conditioning & Refrigeration News

DETROIT THERMOSTATIC

Expansion Valve

The new No. 679 Detroit Thermostatic Expansion Valve is a gas charged, all purpose unit for both domestic and commercial installations, evaporator capacities of which do not exceed 1/2 ton Freon.

Regularly furnished with 1/4" flared nut inlet connection and 1/4" female I.P.T. outlet connection. Can be supplied with S.A.E. or sweat fitting outlet.

Orifice 1/16" or 1/32" • Diaphragms stainless steel, reinforced. • Needle and seat—of special alloy. • Maximum operating pressures normally used—Sulphur dioxide 20 lbs., Methyl chloride 40 lbs., Freon 55 lbs. • Other operating pressures available if desired. • Capillary tube 12" or 60" long.

Ask your jobber to show you this new valve



DETROIT LUBRICATOR COMPANY

DETROIT, MICHIGAN, U. S. A. • 5900 TRUMBULL AVE.

NEW YORK, N. Y. • 40 WEST 40th ST. • CHICAGO, ILL. • 416 S. MICHIGAN AVE.

DIVISION OF AMERICAN RADIATOR & STANDARD SANITARY CORPORATION

Exclusive Representatives—RAILWAY AND ENGINEERING SPECIALTIES LIMITED, Montreal, Toronto, Winnipeg

Distributor-Dealer Doings

Don Keller Partner In Kansas City Firm

KANSAS CITY — Moser-Keller, Inc. has been organized here to replace Moser & Suor, Inc. as Norge distributor in this territory. Moser & Suor, Inc. was dissolved upon the retirement of J. G. Suor, president of the company and one of its founders.

Dan Moser, vice president of Moser & Suor, Inc. since its formation in 1930, is president of Moser-Keller, Inc. Don Keller, general sales manager of the company at the time of Mr. Suor's retirement, has been elected vice president and general manager of the new distributorship.

Mr. Keller became sales manager of Moser & Suor last May after having resigned as district appliance sales manager of General Electric Supply Corp. of Kansas City. For 10 years prior to his resignation, Mr. Keller had directed G-E appliance sales in this area. Previous to that time, he had spent eight years as midwest district manager for Hoover Co. He entered the electrical appliance business some 17 years ago as salesman for Empire District Electric Co., Joplin, Mo.

Tom Condon has been named general sales manager of the new company. Since 1936, Mr. Condon has been associated with Earl J. Goetze, Inc., RCA distributor, as vice president in charge of sales. For three years prior to his association with the Goetze organization, however, Mr. Condon had acted as Moser & Suor's Kansas City sales representative. Previous to that connection, he had been district manager for Brunswick-Balke-Collender Co.

Paul Dow, who joined Moser & Suor, Inc. several months ago as assistant sales manager in charge of advertising and sales promotion, will retain this position with the new organization. Before coming to Kansas City, Mr. Dow had spent 11 years as a member of General Electric Co.'s appliance department at Cleveland. One of his more recent positions there was director of the General Electric Institute.

The remainder of the company's sales and office staff will remain unchanged.

Stephen Seth Forms Company In Baltimore for Bendix

BALTIMORE — Stephen Seth & Co., Inc., recently formed distributing organization with branches here and in Washington, D. C., has been appointed exclusive distributor in the Baltimore-Washington area for the Bendix home laundry unit.

Stephen Seth is president of the distributorship and S. Gordon T. Parks is secretary, treasurer, and manager of the appliance division. Harry S. Eklof has been named assistant to Mr. Parks.

Mr. Parks previously was president of Parks & Hull, former distributor of Westinghouse refrigerators and other appliances in this territory, and more recently was manager of the refrigeration department of the local branch of Westinghouse Electric Supply Co.

Factory Executives Address Alabama Norge Dealers

BIRMINGHAM, Ala.—More than 200 Norge dealers from Alabama and western Florida attended a meeting held here Jan. 10 by Birmingham Electric Battery Co.

Arrangements for the meeting were supervised by Ed Henley, president, and Wilson M. Ewing, Jr., sales manager of the Birmingham organization. Last year's sales, reported Mr. Henley, were the greatest in the company's history.

Norge factory representatives present at the meeting were: P. B. Zimmerman, vice president in charge of sales; E. R. Lovegren, national educational director; W. B. Burruss, special sales consultant; J. M. Tenney, district representative; and L. T. Kearns, special washer representative.

Landers, Frary & Clark Extends Distributing Organization

NEW BRITAIN, Conn.—Landers, Frary & Clark, manufacturer of Universal appliances, has announced the appointment of the following distributors for 1938:

Commonwealth Sales Corp., Richmond, Va.; Baldwin-Hall Co., Inc., Syracuse, N. Y.; Masback Hardware Co., New York City; Supples-Biddle Hardware Co., Philadelphia; H. C. Prutzman Co., Altoona, Pa.; Jos. Woodwell Co., Pittsburgh.

Snow & Weitzel, New Castle, Pa.; Reese-Owens Co., Johnstown, Pa.; Midland Electric Co., Cleveland; Economy Electric Co., Atlanta; Speich Co., Milwaukee; R. R. Kingsbury Co., Kansas City, Mo.; Miller Jackson Co., Oklahoma City; Edwards & Walker, Portland, Me.; American Distributors, Inc., New Haven, Conn.

B. E. Andre Is S-W Dealer

CHARLESTON, W. Va.—The B. E. Andre Co. has been appointed dealer for Stewart-Warner electric refrigerators. Richard Post is sales manager of the company.

3 Distributors Named By Fairbanks, Morse

INDIANAPOLIS—Appointment of three new distributors for the home appliance division of Fairbanks, Morse & Co. has been announced by W. Paul Jones, general manager.

H. I. Sackett Electric Co., Buffalo, has been named distributor for F-M refrigerators, radios, washers, and ironers in the Buffalo area, comprising eight New York and three Pennsylvania counties.

H. I. Sackett, president of the company, is active head of the distributor organization, and Glenn E. Burdick is manager of the appliance department.

Adamson Supply Co., Inc., Roanoke, Va., has become distributor for F-M refrigerators and radios in Roanoke and 16 surrounding counties. John Q. Adamson is president of the company.

Peaslee-Gaulbert Co., Inc., Atlanta, is the new distributor of F-M refrigerators, radios, washers, and ironers in all of Georgia, except nine counties, and in six counties in South Carolina.

Collier W. Helms of Atlanta is in charge of operations in the territory.

'Ham' Smith Joins Reader's

HOUSTON, Tex.—Ham Smith, formerly with Alamo Distributing Corp., has been appointed city representative for Reader's Wholesale Distributors, Crosley distributor in this area.

Redmond Heads Council Of N. J. Electric Leagues

NEWARK—G. J. Redmond, lighting representative of Public Service Electric & Gas Co., Hackensack, N. J., recently was re-elected president of the New Jersey Council of Electric Leagues at a meeting here.

Other officers elected were: F. S. Horning, RCA Mfg. Co., vice president; Robert Beller, Beller Electric Co., Newark, treasurer; Edward A. Gardner, Gardner Electric Service, New York City, secretary.

The executive committee is composed of R. H. Osgood, Okonite Co., Passaic; J. H. McQueston, lighting representative, Public Service Electric & Gas Co., Camden; M. L. Pusey, Western Electric Co., Trenton.

North Coast Electric Is Portland Crosley Outlet

PORTLAND, Ore.—North Coast Electric Co., electrical supply firm serving Oregon and parts of Washington, has been appointed distributor in its territory for Crosley electric refrigerators, laundry equipment, radios, and other products, reports Verne M. Miller, manager of the company's Portland branch.

Hadley Handles Frigidaire

FORT WAYNE, Ind.—Hadley Co., local home furnishing store, has been appointed Frigidaire dealer, handling a complete line of refrigerators and electric ranges.

West Again Heads Philadelphia Assn.

PHILADELPHIA—C. K. West, commercial vice president of General Electric Co., was re-elected president of the Electrical Association of Philadelphia for the fourth consecutive term, at the recent annual meeting of the association's newly elected 1938 board of governors.

Other officers elected were: vice president, Howard L. Miller, president of Utilities Engineering Co.; secretary, Robert J. Moran, chief of the electrical department, Middle Department Rating Association; treasurer, Philip H. Ward, Jr., president of Ward Electric Co.

Dayton F-M Distributor Appoint Several Dealers

DAYTON—Appointment of several new dealers by Appliances, Inc., Fairbanks-Morse distributor in this territory, has been announced by Clyde Graham, local manager of the distributorship.

New dealers, all located in Ohio, are: George W. Veltz & Son, West Middletown; O. E. Richards & Son, West Manchester; Starr City Sales, Miamisburg; Eugene States, Wilmington; Wilson Hardware Co., Washington Court House; Willman Furniture Co., Urbana; and Lebanon Modernizing Co., Lebanon.

Willman Furniture Co. is remodeling its store and has planned a former opening for Feb. 5 featuring a complete product display.

**I WIN FRIENDS
and
INFLUENCE SALES
for You!**

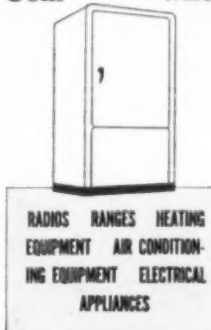
A LARGE volume of this year's refrigerator purchases will be made by people with whom I stand high. I can influence many of them in your favor. That's why it should be important to you to know me better . . . to know all the advantages you get when I am working with you and for you.

Millions of families have bought automobiles, refrigerators, home laundry equipment and other electric appliances on the Commercial Credit Company time payment plan. They have first hand knowledge of the fair and friendly treatment they get. When you offer them this same service in the financing of a refrigerator you have their confidence and good will from the start.

Back of the scenes is the machinery that is of vital importance to you . . . careful credit investigation to prevent risky sales—speedy remittance of your money—an effective but frictionless collection system that relieves you of worry or embarrassment.

With my help on the credit and financial side, you will be free to concentrate on selling and merchandising. That's your main job. That's where your profits come from.

I'm the local manager for Commercial Credit Company. I have headquarters in 205 offices in the principal cities of the United States and Canada. . . . Call on me freely for information and help.



COMMERCIAL CREDIT COMPANY

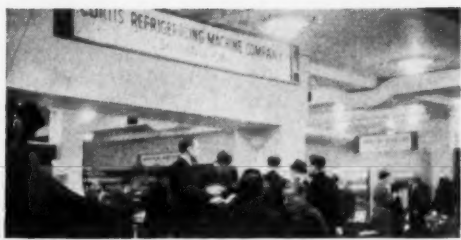
COMMERCIAL BANKERS
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SERVING MANUFACTURERS, DISTRIBUTORS AND DEALERS THROUGH 205 OFFICES IN THE UNITED STATES AND CANADA

Air-Conditioning Exhibits Catch Spotlight at Giant New York Show



Twenty-four of the large number of air-conditioning equipment exhibits of the Fifth International Heating and Ventilating Exposition, which commanded three floors of Grand Central Palace.

General Electric Will Help to Equip 'Super' All-Electric Home in Cleveland

(Concluded from Page 1, Column 5)

clean the house, open and close the garage doors, and perform myriad other tasks.

Kitchen cabinets and all clothes closets will have automatic interior lighting; electric chimes will replace the conventional door bell; electric sun lamps will be a feature of the "health room." Every room will be wired for radio and telephone and will have at least six electric outlets for lamps and other appliances. Beds will have special reading lights.

New and unique ideas in home lighting will be incorporated in the house so that the lighting effects will bring out the color scheme desired and so that every room will be adequately lighted.

Architectural design of the home will follow American Colonial lines. As a result, the house will afford an excellent demonstration of how modern interior treatment and electric home equipment fits in with any desired architectural style.

Constructed on stone and siding

with a slate roof, the house will be 53½ feet wide. An unusually large living room will extend across the entire front of the house. The dining room will be located behind the living room and will be connected to it. The kitchen, also larger than that in the conventional home, will contain a "snack bar."

On the second floor there will be three bedrooms, a "health room," and two baths. A maid's room with bath will be located on the third floor. The basement will include a large recreation room, a complete electric laundry, and a fruit storage room.

A formal garden in the rear of the home will be equipped with night lighting. Other outside wiring will be provided for Christmas lighting.

Work on the home is scheduled to be finished around March 1. Upon completion of the house, the builders plan to first invite inspection by realtors and other interested persons, and then to throw the house open for several weeks' public inspection.

York Profit Nearly Million; Financing Plan is Revealed

(Concluded from Page 1, Column 2)

shows an increase over 1936 of more than 60%.

In his report to stockholders, President William S. Shipley said that York's board of directors is considering a plan to cure the existing default in the first mortgage sinking fund and to retire the outstanding debentures, by the issue of additional first mortgage bonds against improvements and addition by the issue of a new series of notes, which will be offered when market conditions permit.

To sell the new bonds and notes on favorable terms, it will be necessary to give purchasers the privilege to convert them into stock, Mr. Shipley stated. This necessitates elimination of the arrearages of dividends and present preferred stock, and directors are also considering a plan to issue new preferred stock and common stock to present preferred stockholders, in exchange for

the shares which they now own, and accumulated dividends accrued thereon.

Registration statement has been filed with the SEC, but, since amendments will be filed later, is not being submitted to the stockholders at present, Mr. Shipley declared.

Lesley Paul Transferred By Westinghouse

SPRINGFIELD, Mass.—Lesley C. Paul, manager of Westinghouse Electric & Mfg. Co., press bureau at East Pittsburgh for the past five years, has been transferred here to handle press relations for the company's district sales office, the East Springfield and Chicopee Falls, Mass., plants, and the Westinghouse radio stations.

47 Norge Units Installed In Tulsa Apartment

TULSA, Okla.—The Dodge Electric Co. installed 47 Norge electric refrigerators of 6-cu. ft. size in the Sophian Plaza as a part of the eight-story apartment structure's renovation program.

New Vegetable Bags for Refrigerators Introduced By Blossom Mfg. Co.

NEW YORK CITY—Blossom Mfg. Co., which claims to be the oldest and largest oil silk concern in America, has issued some new literature on the lines of oil-silk jar covers and vegetable bags which it manufactures.

Known as "Protecton" covers and "EvrFresh" bags, these waterproof, odorproof, and washable articles are said to be just the thing for covering open dishes placed in the electric refrigerator or for preserving fresh fruits and vegetables in their natural state.

Other claims made for these articles are that they are dust proof, acid proof, will not stick, harden, mildew, or stain, and that they are not affected by either extreme heat or cold.

The company also manufactures oil-silk covers for toasters, mixers, and similar electrical appliances for kitchen use. All of these articles bear the Good Housekeeping Institute's seal of approval.

Commercial Refrigeration

Pre-Cooling Produce Fast-Growing Use For Refrigeration

NEW YORK CITY—Pre-cooling of fruits and vegetables before they are shipped in refrigerator cars, having proved itself as an aid in keeping produce fresh and in saving producers money, has grown to be a major application of refrigeration, particularly in California, where 60,000 cars of foods were pre-cooled in 1936.

That was the picture drawn by D. F. Fisher of the Bureau of Plant Industry, U. S. Department of Agriculture, in his talk, "A Review of Pre-Cooling Practice," given before the opening session of the annual A.S.R.E. Convention here last week.

PURPOSE OF PRE-COOLING

Pre-cooling, said Mr. Fisher, may be defined as the comparatively rapid cooling of a product before shipment, and has as its purposes:

1. Retarding ripening.
2. Preventing parasitic plant disease.
3. Reducing transit refrigeration costs.

When a fruit or vegetable is cut away from the point of its growth, it must depend on its own stored-up "food" to keep it "fresh," it was pointed out. It is known that the rate at which produce advances towards the "spoilage" state doubles with every 18° F. rise in temperature, said Mr. Fisher.

Rapidity with which parasitic plant diseases, contracted in the field, will attack produce after it has been retarded, depends on the environment.

The parasitic organisms grow best at field temperatures, but are stultified at 32° F., said Mr. Fisher.

Quick pre-cooling after harvesting is necessary, said Mr. Fisher, because it cuts down the heat of respiration generated by the produce and reduces the amount of refrigeration needed in transit.

TWO KINDS USED

Two most common kinds of pre-cooling, said Mr. Fisher, are:

- (1) Warehouse pre-cooling
- (2) Car pre-cooling.

Pre-cooling is not done before the fruits or vegetables are packed, except sometimes in the case of cherries and pears, it was pointed out by Mr. Fisher.

Best setup for pre-cooling is to provide an inlet through slots in the floor.

If this is not feasible, next best plan is to place a canvas drop in the car down to the level of the produce, so that the cold air currents will strike it and drop down onto the floor and circulate through the boxes.

HOW AIR IS DISTRIBUTED

Pre-cooling is done with both ice and salt, and with mobile mechanical refrigerating equipment.

Where the car is equipped with ice bunkers, the air is drawn up through the ice-filled bunkers at either end of the car, and is blown down on the produce by means of blowers.

The mobile unit employing mechanical refrigeration is drawn up to the door of the freight car, and by means of canvas ducts, the refrigerated air is blown in at the top of the car, and is taken out by means of another canvas duct at the bottom.

A mechanical refrigerating unit of this type, using cold air at 25 to 28° F. will cool a carload of oranges from 75° to 40° F. in about six hours, said Mr. Fisher.

In estimating the amount of refrigeration needed to cool a load of produce the following formula is generally used, said Mr. Fisher:

Weight of product x specific heat factor of product x desired temperature difference will give the total heat to be removed from the product in B.t.u.

Another 25% or so must be added for heat leakage and other factors contributing to the refrigeration load.

Widow of E. E. McCray Succeeds Husband As President

KENDALLVILLE, Ind. — Mrs. Lena McCray, widow of E. E. McCray who died Dec. 30 in Atlanta, has been elected president of McCray Refrigerator Co. by the board of directors.

Homer McCray, vice president, has been elected chairman of the board. Other board members are: J. W. Hart, vice president and secretary; R. E. Davis, vice president and treasurer; and R. J. Rehwinkel, vice president and general sales manager.

Dough-Retarding Box Introduced by Fogel

PHILADELPHIA—Introduction of a new bakers' dough-retarding refrigerator and of a new upright dairy refrigerator has been announced here by Fogel Refrigerator Co.

The bakery refrigerator, classified as model P-201, is specially built for the use of bakers, and also can be used in hotels, restaurants, hospitals, and other institutions.

Its overall dimensions are: height, 78 inches; width, 69.5 inches; depth, 30 inches. A full length compartment is on one side of the center support, while on the other side are two half-length compartments, one for storage, the other housing the refrigerating unit.

The full-length compartment has horizontal pan-slides with a capacity for 28 trays. The half-length storage compartment has three wire shelves, with five different pairs of ledges providing flexibility of shelf arrangement.

Total net food capacity of the refrigerator is 52 cu. ft., and other sizes are available in wood or stainless steel finish.

The standard bakery refrigerator is finished in porcelain on Armco steel, and is insulated with 3 inches of Armstrong one-piece fabricated "Temlok," wrapped in layers of waterproof felt.

The unit may be obtained with conventional type coils or with a forced draft system using Fogel accelerated air baffles.

Fogel's new dairy refrigerator is 79 inches high, 69 inches wide, and 30 inches deep. It may be obtained with the conventional type of coil system or with the forced draft blower type of unit.

Constructed of heavy steel with porcelain finish and black trim, the dairy unit has 3 inches of Armstrong sheet insulation wrapped in layers of waterproof felt.

Display section, lined with white porcelain, contains a butter slide, two large steel-shelved display compartments on each side, and three tilted sliding doors.

Koldtemp Named Kelvinator Dealer in Queens

JAMAICA, L. I., N. Y.—Koldtemp, Inc. has been appointed exclusive commercial distributor of Kelvinator equipment in Queens, Nassau, and Suffolk counties, New York.

Sales division of the company is in charge of Herbert Levine, formerly with Majestic Refrigerator Corp., and the service department is headed by Dewey Williams.

Borg-Warner Is Kramer Export Representative

CHICAGO—Borg Warner Service Parts Co. has been named exclusive export representative for the Kramer line of refrigeration and air-conditioning equipment manufactured by Trenton Auto Radiator Works, Trenton, N. J., announces Ray P. Johnson, manager of the refrigeration and heating department of the Borg Warner company.

Borg Warner Service Parts also has been named to handle export sales for Wolverine Tube Co., Detroit, to augment the export outlet already used by that company, Mr. Johnson said.

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Distributors & Dealers in Columbus, Ohio Prospered in '37

Distributors Express Greater Optimism Than Retail Outlets, Survey Shows

By Alfred Jones

COLUMBUS, Ohio—An average increase of 28.5% for sales of appliances in 1937 over sales in 1936 was reported by 10 distributors of electric refrigeration here, two of whom said sales in December, 1937 were better than in November, five of whom said December sales dropped off.

The 10 distributors represent an aggregate total of approximately 870 dealers and other retail outlets in 35 central Ohio counties. Of course, many of these dealers handle more than one line of refrigerators, and the actual number of outlets therefore is considerably less than 870.

Seven of the 10 distributors said that for them 1937 was a better year than 1936, the quoted increase ranging from 7.5 to 135%. The distributor with the 135% increase explained that he based his computation on the quota set at the beginning of 1937. In 1936, another distributor was the agency in this territory for his particular make of refrigerator. Compared with the 1936 record of his predecessor, this distributor chalked up an increase of about 500%, he declared.

One distributor emerged from 1937

with a sales total approximately equal to that of 1936. Another found that his business declined. The latter is R. C. Bohannon, Crosley distributor, who explained that 1937 would have been easily as good as 1936 had it not been for the combined fire and flood disaster which, in January, seriously damaged the Crosley plant in Cincinnati and hampered business for the remainder of the year.

A drop-off in December as compared with November was felt by five distributors.

J. W. Tracey, of Bard, Inc., General Electric distributor, said that December sales were 20% below November sales, and that the latter were about the same percentage below sales of October. Bard has 127 display points in 33 counties, including dealers and utilities. During the year, Mr. Tracey said, Bard lost three dealers but added 16, making a total gain of 13 new outlets. Sales increase for the year was 33%.

Mr. Bohannon said that December sales were worse for his company, and that in the last two months of the year he lost 10% of his dealers, bringing his total down to 100 outlets in 16 counties.

A 75% decrease for December was experienced by Pixley Electric Supply Co., although a total gain of 30% was made during the year. Pixley supplies 150 dealers in 25 counties.

December sales of Appliances, Inc., Fairbanks-Morse distributor, were 50% below those of November, which in turn were far below October sales, according to W. A. Zerbe, division manager. For the year, Mr. Zerbe reported a gain of about 7.5%, adding that without the sudden slump the gain would have been at least 15%. Appliances, Inc. serves 68 dealers in 29 counties, having added some during 1937.

Strong, Carlisle & Hammond Co., Norge distributor for 88 dealers in 22 counties, experienced a December sales slump of 20%, stated M. P. Lintner, manager. For the year, however, the company had an increase of 30%, with refrigerators alone being 35% ahead of 1936.

On the black side of the ledger in regard to a December-November sales comparison were two distributors.

S. G. Todd, manager of the M & M Co., a branch of the Cleveland unit and distributor in 27 counties for about 30 Grunow refrigerator and radio dealers, said that he recorded marked upswing in sales in December. For the year, he said, the sales total held even with 1936.

December was 50% better than November for Kane Co., Stewart-

Composite Score Card for Columbus Distributors for 1937

1. How did the 1937 sales volume compare with that of 1936?
Seven said it was greater, one said it was about the same, one said it was less, and one was not in the field in 1936. Average increase for the nine reporting distributors was 28.5%.

2. What percentage of refrigerator sales entailed replacements of mechanical refrigerators?
Five said none; the highest estimate was 12. Average for the 10 distributors was 2.05%.

3. Did the early introduction of new models help Christmas business?
Of the six distributors who had early introductions, three said yes, three said no.

4. How did December sales compare with those of November?
Two distributors said December sales were better. Five said they were worse. The other three made no comparison.

5. What new lines of equipment did distributors take on during the year, and why?
One took on the Bendix home laundry as "the answer to the depression." One added gas ranges to increase sales. One filled out his line with electric washers, ranges, and sweepers. One readily accepted the Electromaster range because it is, he said, a good seller. He also made plans to take on gas ranges, room air conditioners, and stokers.

6. Do distributors still carry on outside selling? Cold canvassing?
Nine distributors do wholesale business only. The other one maintains outside selling and cold canvassing on some of the appliances he handles.

7. What form of advertising or promotion did distributors find most effective during the year?
Four distributors said newspaper advertising was their best promotion scheme. One favored handbills. One held that personal contact was the most effective method. One sponsored a radio program over a local station, and found it to be most effective. The other three distributors declined to nominate any one form of promotion as the most effective.

8. Do distributors maintain their own service department? For all products carried?
All 10 of the distributors have service departments. Nine of them service all of the appliances they carry. One even employs a traveling service man to help dealers in the territory.

9. Did distributors sell any all-electric kitchens or make any combination sales during 1937?
Two distributors sold some all-electric kitchens during the year. One arranged with a kitchen unit organization to promote them in 1938. Most of the others made some combination sales.

Warner distributor, and January sales are continuing the rise.

Opinion on the value of the early introduction of 1938 models as a stimulant to Christmas sales was evenly divided. Only six distributors had early introduction, and three said they were benefited. These three are Bard, Inc.; General Electric Supply Corp.; and American Sales Co.

American Sales Co. is Westinghouse distributor here, its organization including 139 dealers in 33 counties. A slight increase in dealers has been made since last May.

The early introduction of the 1938 Westinghouse refrigerators put new life into the company's activities and aided Christmas sales very much. Total sales for the year were 50% above the 1936 mark.

Two distributors were highly enthusiastic over the new appliances they took on in 1937.

Mr. Todd, of the M & M Co., said, "The Bendix home laundry is the answer to the depression."

Since accepting the franchise at the beginning of December, he said, the M & M Co. has sold 150 units, many of them in territory which is considered backward.

Mr. Zerbe of Appliances, Inc. is so confident that 1938 will be a good year that he intends to add to his line what he calls "bread and butter items," namely gas ranges, stokers, and "packaged" air conditioners.

M & M Co. is the only one of the 10 distributors to do any outside selling, all the others confining their activities to wholesale business among dealers.

Said Mr. Todd of cold canvassing, "It carried many dealers through the depression (i. e. the old depression), and we are not forgetting it now. Outside selling really works."

Newspaper advertising is the favorite method of promotion for four of the distributors, including the M & M Co.; Appliances, Inc.; Strong, Carlisle & Hammond Co.; and G-E Supply Corp.

Mr. Bohannon, the Crosley distributor, declared that handbills proved most effective for his company in 1937.

American Sales Co. depended largely on personal contact for the majority of its 1937 sales.

A 15-minute daily radio program over a local broadcasting station was

Kane Co.'s most effective advertising medium.

The general outlook for 1938 is encouraging, the distributors say.

Mr. Todd anticipates a good refrigeration business with the new Grunow Thermene unit, and a very good business with the Bendix Home Laundry.

Although he expects it to be small, Mr. Tracey does look for an increase in 1938 over 1937 sales. Bard, Inc., has added four salesmen to its staff in the belief that the 1938 business will improve.

N. P. Wright, general manager of Appliance Distributing Co., Leonard distributor for 51 dealers, is looking for a 50% increase in 1938, mainly because the company is just growing.

The firm has been Leonard distributor only since January of last year. The volume set by the previous distributor in 1936 was doubled.

Mr. Wright said, chief reasons being a highly efficient dealer organization and the addition of two large accounts not held by the former distributor.

Mr. Zerbe expressed his confidence in an expanding rural market in 1938.

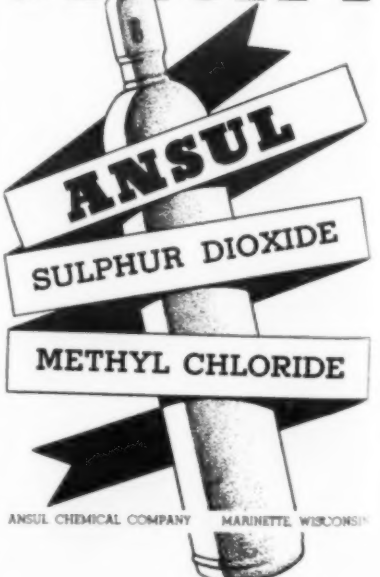
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But See Need for Hard-Hitting Selling in Coming Season

Rural Markets & New Appliances Help to Sustain Dealers in Current Recession

By Alfred Jones

COLUMBUS, Ohio — Despite a sudden slump in the late fall which they attribute to the general Roosevelt Recession, a representative group of major appliance dealers in the Ohio state capital reported an average gain of 7.6% for 1937 business over that of 1936.

Tenor of opinion seemed to be that if the nightmare of the last two or three months of the year had not materialized, 1937 would have been easily one of the best, if not the best year in the history of the local retail appliance business.

For the most part, dealers were reservedly optimistic about 1938, saying that "if this trouble irons itself out," and "if public confidence returns," and "if the government makes up its mind," and "if we can get by the first five or six months all right," the rest of the year should be comparatively smooth sailing, with total business as good as it was in 1937.

From the several conversations with dealers, the feeling arises that the two most necessary accomplishments to put business in general back on its feet after being floored by the solar-plexus punch of the recession are: amicable and speedy settlement of the government-capital-labor wrangle; restoration of public confidence and buying power.

Regarding Columbus as a market, the dealers stated that the buying public is divided roughly into three groups: the general citizenry, employed as wage earners in the numerous small industrial plants, small business offices, and similar limited enterprises; the government employees, working for steady, if small, salaries in the various branches of the Ohio state government centered

here; the rural population, composed of farmers and "country-folk" living in the rural territory surrounding the city.

The general public has been hardest hit in the pocket book by the "current recession," and naturally cannot buy major appliances at present. Even if they could make a substantial down payment, most of the general wage-earning group would not buy right now, the dealers say, because they are uncertain about their immediate future.

Government employees, assured of steady work and pay, have nevertheless become uneasy about buying expensive appliances.

The rural folk are the class who apparently don't mind the present uncertainty, for they are continuing to buy appliances. The Rural Electrification Administration program is quite an aid in increasing the potentialities of the rural market, the dealers say.

One new appliance that seems to be "going great guns," and which, in fact, began its spurt about a month after the beginning of the slump, is the Bendix home laundry.

Dealers who have taken it on are buoyed up with its reception and dealers who have not stocked it are interested in it. In 1937, four dealers added the Bendix home laundry to their lines, namely, the Morehouse-Martens Co. and the F. & H. Lazarus Co., two leading department stores; Emswiler Electric Co., Frigidaire dealer; and the Good Housekeeping Shop, reputedly the original Good Housekeeping Shop.

Both Morehouse-Martens and Lazarus staged special public demonstrations of the Bendix unit in their

appliance departments, and have sold quite a number of them.

C. B. McQueen, acting manager of the Emswiler store in the absence of the owner, said that in his opinion the Bendix home laundry will completely change the washing machine industry.

The dealer reporting the greatest percentage increase of appliance sales in 1937 over 1936 is the Modern Appliance Shop, Kelvinator outlet, which, with its two local branch stores, recorded a gain of 25%.

G. L. Thompson, manager of Thompson and Hamilton, Inc., Frigidaire and General Electric dealer, said that his company's increase was between 20 and 25%.

Other reported gains were variously estimated at 20% (two dealers thus judged), 15%, 6%, and 3.5%. One dealer placed his increase at 50 units. Four dealers said that their 1937 and 1936 sales totals were just about the same. A 25% drop-off was set by another dealer.

Two new dealers entered the picture during the year, and hence could make no comparison with 1936. They are the local branch of Ohio Electric Sales, handling Stewart-Warner refrigerators, and Greiner's Service, an automobile service company now selling refrigerators as an adjunct to its business.

Most of the dealers said that sales were going along in admirable style when suddenly they were choked off without warning. Only one dealer,

Phil Brobston, said that December was better than November. Mr. Brobston estimated December sales to be 50% ahead of November, but added that compared to previous months November was a rotten period for sales.

The Gas Co., selling Servel Electrolux refrigerators, said that sales in November and December were on a level with each other.

Nine dealers readily quoted December drop-offs ranging from a "small percentage" in the case of Emswiler to a "hell of a drop" in the case of Robinson's, Inc., dealer for Kelvinator and Briggs refrigerators.

Evidently the early introduction of 1938 refrigerator models was of no aid in lessening the business slump for the majority of the dealers contacted, for only one of them said the idea helped to increase Christmas sales.

Quite a few of the dealers said that under ordinary circumstances they would have benefited by the early introduction. However, the slump eliminated this possibility. Those dealers who handled General Electric refrigerators in 1936 said that the early introduction in that year considerably boosted their Christmas sales.

Judging from the percentages quoted by the dealers, trade-ins are a minor problem in the Columbus retail appliance field. Of the 10 dealers who could estimate what proportion of their sales entailed the

taking in of a used refrigerator, the average figure was 11.8%.

At one end of the scale stood Phil Brobston Appliance Co., with practically no trade-ins. At the other end was Acme Radio & Electric Co. with 50%. However, the Acme company is primarily a service firm, and handles Grunow refrigerators as more or less of a side line.

Outside selling with plenty of old-fashioned cold canvassing, still is one sure method of getting prospects, according to the majority of the dealers. Thirteen of them pursue sales outside of their stores, following up all kinds of leads. The door-to-door formula is consistently adhered to by 11 of the dealers.

Robinson's, Inc. has seven salesmen alternating on floor sales and field selling. Emswiler's has four men doing a similar job. The crew of the Good Housekeeping Shop varies from 8 to 16, depending upon the season, all pushing doorbells on strange houses. The Gas Co. has 38 men in the field. Most of the sales of Groce Electric Co. result from cold canvassing. Phil Brobston declared that cold canvassing is the only way to get business. Ohio Electric Sales' six-man staff does plenty of scouting.

Dave Groce held that using the user was his most effective way of promoting sales. Acme Radio & Electric Co. has found personal telephone calls to be the surest prospect-getter.

Composite Score Card for Columbus Dealers for 1937

1. How did the 1937 sales volume compare with that of 1936?

Seven said it was greater, four said it was just about the same, one said it was less, and two could make no fair comparison. Average increase for all reporting dealers, except the last two, was 7.6%.

2. What percentage of refrigerator sales entailed replacements of mechanical refrigerators?

Only 10 dealers could make estimates, one of them quoting no replacements at all. Percentages ranged from 2.5 to 50, although the latter figure came from a dealer who handled refrigerators as a comparatively small sideline. Average percentage of the 10 reporting dealers was 11.8.

3. Did the early introduction of new models help Christmas business?

Of the 11 dealers who had early introductions, only one said his business was benefited, and that was because he could stage a clearance sale on 1937 models. The other 10 were not benefited at all by the early introduction.

4. How did December sales compare with those of November?

One dealer said December sales were better, one said they were about the same, nine said they were worse, three declined to make a comparison.

5. What new lines of equipment did refrigerator dealers take on during the year, and why?

Four dealers took on the Bendix home laundry, the respective reasons being that it is a new product, that it is revolutionary, that it is unique, and that it helps to balance the line. One of these four dealers also took on the General Electric sun lamp to offset his refrigerator sales slump. Another of these dealers also added a stoker to help balance his line. Other than these four dealers, one took on an electric washer to fill the line of products, and another took on a complete variety of major electrical appliances with a new franchise.

6. Do dealers still carry on outside selling? Cold canvassing?

Thirteen dealers do outside selling. Of these, 11 do actual cold canvassing. The other two follow store leads. One dealer does no outside selling.

7. What form of advertising or promotion did dealers find most effective during the year?

Four dealers said that newspaper advertising was most fruitful. One voted for plain house-to-house canvassing. One compromised and voted for both methods. One combined newspaper advertising with cut price as the best sales-getters. One declared that classified advertisements, personal contact, and direct mail were his most effective means. One listed a radio program and newspaper advertising. One said using the user was the surest way, and one held that telephone conversations were best.

8. Do dealers maintain their own service department? For all products carried?

Of the 13 dealers who maintain service departments, six service all appliances they carry, and seven service only certain appliances, sub-letting work on the others, or making arrangements with their distributors. One dealer has no service department.

9. Did dealers sell any all-electric kitchens or make any combination sales during 1937?

Two dealers sold some all-electric kitchens. Six, including these two, sold quite a number of combinations. Eight dealers sold neither. Most of the latter octet hadn't the stock to sell any all-electric kitchens.



RE-SEALABLE!

THEY'RE DRY... as proved by their dielectric strength of 25,000 volts. And you can KEEP them dry... because Capella Oils now come in refinery-sealed and re-sealable 5- and 1-gallon containers.

Refrigerator service men using Texaco Capella Oils report "protection against absorption of moisture, uniformly free flow at sub-zero temperatures, remarkable stability, and resistance to sludging in contact with modern refrigerants."

There are 6 different viscosity grades suitable for the entire range of operating conditions... each make of equipment... every type of refrigerator.

Trained lubrication engineers are always available for consultation on the selection and application of Texaco Capella Oils. Prompt deliveries assured through 2108 warehouse plants throughout the United States.

The Texas Company, 135 East 42nd St., New York City.



FREE... 56 pages of valuable information on the lubrication of refrigerating equipment. You'll find it helpful in your work. Write for your copy.

6 TEXACO

Capella OILS



AIR CONDITIONING & REFRIGERATION NEWS

Trade Mark registered U. S. Patent Office;
Established 1926 and registered as
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Air Conditioning Needs Terminology

RICHARD F. ROPER, president
of Pleasantaire Corp., has
the very definite feeling that
manufacturers of summer air-
conditioning equipment will move
ahead much faster when they
cease trying to tack the name
"air conditioning" onto their room
coolers.

Air conditioning, he says, is a
system; a room cooler is an
appliance. In the public mind air
conditioning is all entwined in a
series of ducts and pipes and
gigantic chambers and big machin-
ery. And expense—high first cost
coupled with substantial operation
and maintenance charges.

Room Coolers Are Plug-in Appliances

A room cooler, Mr. Roper points
out, is as much a plug-in, mass-
production appliance as a radio
or an electric refrigerator. You
can install it almost anywhere in
a jiffy, and then if you want to
move it somewhere else—to an-
other room, another building, or
another city—you can do it with
a minimum of difficulty and
expense.

Because of its package nature,
its production on a quantity basis,
and its high reclamation value,
the room cooler is a comparatively
economical piece of merchandise.
It should be so advertised, Mr.
Roper believes, and not confused
in the public mind with the
relatively more costly complete
air-conditioning equipment.

Man Bites Dog; This Is News

These views, expressed to those
who visited him during the Fifth
International Heating and Venti-
lating Exposition, are especially
interesting because of the fact
that they reverse the normal
situation. Usually it is the manu-
facturer of complete air-condition-

ing equipment who yelps about
the maker of specialized air-
tempering products appropriating
the name, "air conditioning."

This latter attitude is expressed
in the letter from a Carrier repre-
sentative in London, printed on
this page. Manufacturers of such
stature as Carrier and York
complain, and rightly so, that the
fabricator of a hot air furnace
or a room cooler has no right to
label his limited-function products
"air conditioning."

Now comes one of the latter
type of manufacturers who says
that not only is such nomenclature
unjustified, but it is downright
foolish.

Room Cooler Business On Verge of Expansion

This is a point that deserves
considerable thought right at this
time, for the room cooler business
seems to be on the verge of
large-scale expansion.

High installation costs, some-
times pushed out of reason by
union labor stipulations, are mak-
ing the package unit more and
more attractive to the buyer of
moderate means. Refinement of
the room cooler has proceeded
pace with the more highly
publicized development of package-
type complete air-conditioning
units; and with increased volume,
prices are now within range of
almost every type of prospect.

Moreover, both dealers and the
public are getting away from the
idea that exact temperature con-
trol is necessary to insure comfort.
As a matter of fact, many
observers feel that a great number
of air-conditioning installations
overdo the cooling job. The differ-
ential between outside and inside
temperatures becomes too great
for both good health and comfort
when the inside temperature is
held at rigidly low limits.

Low-Cost Units Sought For Relief from Heat

Hence, there is a leaning toward
the purchase of low-cost package
units which will provide some
cooling effect to gain relief on the
part of those prospects who are
not yet ready to install complete
air-conditioning systems.

Even though the room cooler
they install may not be scien-
tifically made-to-measure for their
particular office, store, or bedroom,
such purchasers reason that at
least it will be a great help.

The discussion above is in no
sense to be construed as favoring
makeshift air conditioning, of
course. No substitute can be
found for the correctly engineered,
adequately powered complete air-
conditioning system.

'Room Cooler' Is an Expressive Term

Point is that it might be a good
idea for the makers of room
coolers to stop calling them "air
conditioners" and promote them
for what they are: reasonably
priced, simple-to-install appliances
which afford relief from excessive
heat and humidity—appliances
which have great appeal for the
buying public today.

Those two words, "room cooler,"
are as simply and totally expres-
sive of the appliance as any name
in the entire specialty merchan-
dising realm. More capital should
be made of them.

LETTERS

A Britisher Makes Some Distinctions

Carrier Weathermakers, Ltd.
27, Conduit St., London, W.1

Editor:

I have read with interest the
display on page 17 of your Jan. 5
issue headed "John Public pays the
bills." We, over here are obviously
not in need of long periods of cooling,
as you may be in America and as
are a number of other countries, but
even so, without high humidities and
occasional fairly high temperatures
in the summer we do find it possible
to interest people in cooling and
dehumidifying in summer.

I have always been under the
impression, however, that air condi-
tioning went a very great deal
further than cooling in the summer.
What about ventilation of the posi-
tive kind in connection with air
conditioning? What is going to
happen to the temperature and hu-
midity in the summer, when it is
found necessary to open windows to
get outside air? What about proper
air movement and air purity?

This seems to be a specialist's job
and all the refrigerator manufactur-
ers, engineers, experts, and sales
people in the world combined could
not adequately sell air conditioning
without some training in the funda-
mentals of air conditioning as such.

It may be that the public in your
country and other countries has come
to appreciate cooling and dehumidify-
ing in summer, but we are attempting
to educate the public over here to
the fact that air conditioning must
be a year-around functioning instal-
lation, if it is to be called air
conditioning.

Heating is called heating; venti-
lation is called ventilation; refrigera-
tion is called refrigeration; circula-
tion of air comes under the venti-
lation heading and air purity may be
achieved by filtration, but surely it
takes a combination of all this,
properly controlled and adequately
calculated in relation to the size of
the space, heat gains and losses, and
capacity of the equipment, before
you can say that that space is air
conditioned.

The refrigerator dealer may well
be the logical sales outlet of air-
conditioning equipment but not until
he has had some training in other
things than refrigeration.

Our experience in this country, is
that the so-called air-conditioning
installations, merely consisting of
comfort cooling and dehumidification
with a certain amount of non-
positive ventilation and recirculation,
result very frequently in over-cooling
and its many ills. This certainly is
not the way to build up the air-con-
ditioning industry.

Control of temperature and hu-
midity involves other things besides
refrigerators, compressors, and other
integral parts of refrigeration, and
in our humble opinion, there should
be a definite distinction in the educa-
tion of the public and in the installa-
tion of equipment between comfort
cooling and true air conditioning.

It is true that there is nothing
new about heating of houses in
winter time, but what about the
humidification of the heated air
amongst the various other necessary
functions of air conditioning in the
winter?

That is probably just as new an
idea as cooling of buildings in hot
weather, and is certainly just as
necessary for human comfort. It is
perhaps not necessary for me to deal
with the question of effective tem-
peratures, but humidity control obvi-
ously has a great deal to do with
human comfort, winter and summer.
We may be wrong, but are we?

A. GORDON DEFRIES,
Director

Service Man Wants Lighter Vein in News

Editor:

My copy of AIR CONDITIONING &
REFRIGERATION NEWS arrived the other
day, and was glanced over, filed away
and forgotten in about 10 minutes.

My occupation is service man,
working for Wallace Carrier, who
bosses the Authorized Refrigeration
Service Co. of Chicago, doing mostly
refrigerator work, and doing a good
job of it, the both of us.

My name is Herbert H. Sellers, has
been on your subscription list for
about 11 years I guess, and you don't
owe me anything. We are just about
even.

Now I would like to state the cause
of my quick disposition of the NEWS
upon its arrival and the reason of
my effort in the literary field in

calling your attention to the fact that
your newspaper of the industry is
lacking a feature that will interest
service men, that great branch of the
industry who go out and meet the
dear old Public and his Missus, and
are a real human factor in smoothing
out the grief and troubles in our
business.

I am sure a large number of service
men are subscribers to the NEWS, and
I feel sure you feel like giving them
a good run for their money, as they
would if they took your money for
services rendered in their daily tasks.

Looking backwards, I am sure I
got the most pleasure from the NEWS
when Editor Taubeneck wrote the
Expansion Valve column, and gave
us human interest stories of his
speedy Auburn car, and pictures of
it, told us about his picturesque
roommate, the gangsters at his hotel,
his girl friend in the movies, human
interest stories wrapped around and
warming up cold news about refrig-
eration.

Then George made a trip around
the world. I don't see much of his
stuff recently. The last issue has
some plugs for his world's tour book,
which are all o.k. as is the book. I
read it serially and enjoyed that trip
as much as George did.

So, with all due respect to this
great writer, how far away has he
traveled from the common herd, but
then how could it be otherwise. A
college grad, a swell personality, a
world traveler, sophisticated hob-
nobber with high brows all over the
globe, still we know our friend as he
wrote for us in the old days.

Now we have a technical paper
with no trace of humanized relation-
ship, too dry for our service workers
who have spent their days on techni-
cal and mechanical matters, and need
a respite.

Why not a column of, by and for
service men, absolutely non-technical
sprinkled with humor, tying in
timely interesting items of sports,
inviting contributions from service
men, their jests and comments would
"hew to the line, and let the quips
fall where they may."

From the foregoing you will know
the writer is not college trained, or
an experienced writer. Anyhow such
a person would shoot over the heads
of the class he is seeking to interest.

If you are interested in this sugges-
tion, I would be happy to discuss it
further with you in person.

HERBERT H. SELLERS

Japan Leads Orient Into Air Cooling, Says Hillen

Oriental Carrier Engineering Co., Ltd.
Tokyo, Japan

Editor:

I have followed with interest
through your magazine the extended
visits of George Taubeneck and John
Strohm to various parts of the world,
for the purpose of studying the
progress being made in air condition-
ing and refrigeration, and I have
wondered why no one has come to
Japan to report on the work being
done here.

It is true that only a small amount
of equipment is exported from Amer-
ica to Japan, but the majority of the
equipment being manufactured and
installed here is based on the Ameri-
can design.

If you visit here you would find
about 20 department stores totally
air conditioned from the two base-
ments up through the top floor. The
largest one of these stores requires
three centrifugal refrigeration ma-
chines of 400-hp. capacity each.

All of the leading moving picture
theaters, including houses of 4,000
persons capacity, have been condi-
tioned.

Five large-size banks and the Tokyo
and Osaka Stock Exchanges of 4,000
persons capacity each, as well as a
number of stock brokers' offices have
been conditioned. The Tokyo Stock
Exchange is a replacement of a
former silica gel system which never
cooled sufficiently.

A large number of office buildings
including one now being installed
which will have three centrifugal
refrigeration machines with motors
totaling 1,000 hp. have been condi-
tioned.

Two large new broadcasting sta-
tions, as well as, a planetarium have
been conditioned. In one new hotel
in Osaka all lobbies, dining rooms,
and bedrooms facing the sun have
been conditioned.

In Tokyo the famous Imperial
hotel is adding an addition which
will have 240 air-conditioned bed-
rooms on the top floor of the present
building.

Another hotel is also being erected
in which all of the bedrooms, 660 in
number, plus all lobbies, dining
rooms, and so forth are being condi-
tioned. This is being done with a
350-hp. centrifugal refrigeration ma-
chine plus 125 tons refrigerating
capacity from well water.

Restaurants of various sizes both
foreign and Japanese have been

conditioned with various types of
equipment from the central-station
type through the various unitary
types available.

Hospital operating rooms and bed-
rooms have been conditioned by
water-cooled units as well as by self-
contained portable units.

Due to the availability of well
water most of the installations secure
approximately 30% of the capacity
needed by means of pre-coolers, well
water then being pumped through the
condenser of the refrigeration
machine.

And, in a few cases, as in theaters,
where such a large quantity of
dehumidified air is required by law
that overcooling would result, the
condenser water is then passed
through re-heaters thereby causing
the well water to perform three
functions in series.

In other places due to non-avail-
ability of well water and the high
price of city water you would find
applications of evaporative conden-
sers for installations up to 80 tons
capacity, and spray-type evaporative
condenser water coolers for larger
installations.

Probably the first application in the
world of reverse cycle heating by
centrifugal refrigeration machine has
just been installed in a building in
Osaka. This refrigeration machine is
using a 220-hp. motor and both
summer cooling and winter heating
is being performed by the refrigera-
tion machine.

You would also find many resi-
dences and individual offices condi-
tioned by various types of direct
expansion unitary equipment.

The rapid expansion of Japanese
cotton spinning and weaving mills, in
which they are first in world produc-
tion, and of rayon, in which they
are second in world production, as
well as wool, staple fibre, and other
textiles, has been made possible by
the extensive use of air conditioning
in their factories.

There are at least eight large size
artificial ice skating rinks, as well
as, innumerable applications of all
types of domestic and commercial
refrigeration including those on the
fishing boats in which you would be
interested.

If you would then care to visit
Korea you would travel on a new
completely air-conditioned boat in-
cluding first, second, and third class,
all dining rooms and lobbies. Passen-
ger capacity of this boat is 1,600
persons.

In Korea you would find air-condi-
tioned dining rooms and you could
then proceed to Manchukuo and ride
on 35 cars of the South Manchurian
Railway which have been conditioned
by the steam jet method. You could
also visit radio broadcasting stations,
tobacco factories, theaters, and a
number of other installations before
proceeding on to Formosa, where
you would find further air condition-
ing in theaters and private offices.

I have been told by visitors passing
through here from Java and India
that the application of air condition-
ing in Japan will influence its
adoption in other Far Eastern coun-
tries more than the wide application
in America.

Apparently, heretofore, it has been
felt by many of these Far Eastern
countries that air conditioning was
something particularly suited for
Americans who went in for all sorts
of new ideas and that it had no real
application for them, and that when
they realized its wide application in
Japan it comes much closer to home
and causes them to realize that it
can solve the problem of tropic heat.

Why don't you come over and see
us some time?

W. G. HILLEN, Chief Engineer

Praise Still Forthcoming For Chicago Conventions

COPY

Republic Electric Co.

Davenport, Iowa

Mr. J. S. Forbes, Treasurer,

Kerestest Mfg. Co.,

2525 Liberty Ave.,

Pittsburgh, Pa.

Dear Mr. Forbes:

The writer wishes to express his
thanks to you and the National
Refrigeration Supply Manufacturers'
Association for the luncheon and
banquet as well as all of the grand
entertainment which was so much
enjoyed while at the convention in
Chicago.

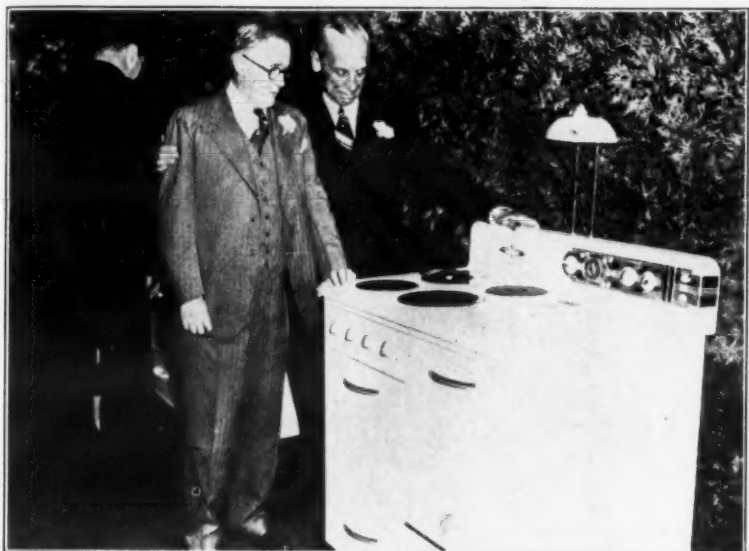
We also enjoyed so very much the
many booths in which were displayed
the many products in which the
service engineer and jobber are in-
terested. It was a great success from
beginning to end and we thank you
for it.

The writer is the secretary of the
Mississippi Valley Chapter of the
R.S.E.S., which is third largest in the
country, and I have had different
members come to me stating that it
was one of the best displays they
have ever seen and that they received
a great benefit by attending the
national convention.

E. L. BENGTSON,
Asst. Sales Mgr.

Major Appliances

G-M Heads View Frigidaire's Newest



Richard T. Grant, vice president of General Motors Corp. in charge of sales, and Alfred M. Sloan, board chairman, inspect the electric range, newest member of the Frigidaire family, at the showing in New York City.

Birmingham Utility To Promote Ranges

BIRMINGHAM, Ala. — Electric ranges and water heaters will be the principal items to be promoted this year by Birmingham Electric Co., the utility announced to about 100 of its dealers at a recent meeting.

Range sales here, according to the company's report, are rapidly on the increase, due largely to a combination of factors, including the improvements which have been made in range construction and operation, the continued downward trend of electric rates, the increase in home modernization, and aggressive city-wide advertising and sales promotion.

Water heaters will be promoted in connection with the ranges, as the utility's past experience has shown that this item is the best-selling companion appliance for the electric range.

A quota of 1,600 ranges has been set by the utility for itself and its dealers during 1938.

Bendix Has \$1,000,000 To Spend in 1938

SOUTH BEND, Ind. — Declaring that his company is treating the current business recession as a real opportunity, Judson S. Sayre, vice president in charge of sales of Bendix Home Appliances, Inc., has announced an appropriation of a million dollars for advertising and sales promotion in 1938.

A big part of this sum will be spent in the first four months of the year, Mr. Sayre added. This appropriation doubles the amount used in the Bendix home laundry introductory campaign last year, and will be divided between newspapers, national magazines, and promotion.

Three thousand dealers have signed franchises and stocked machines since the recession began, and demand created by advertising has kept the Bendix factory working at full capacity right through the recent holidays, Mr. Sayre said. He added that the bank of orders now on hand would keep the factory at capacity for the next four months.

Standard Announces Name, Model Changes

TOLEDO — Changes in name and personnel of Standard Electric Stove Co. and expansion of the company's activities, including addition of two new models to its line of electric ranges, have just been announced.

President of Standard Electric Mfg. Corp., new name of the reorganized firm, is Joseph W. Robinson, former president of Libbey Glass Co. here. Mr. Robinson was connected with that company for 25 years before its sale to Owens-Illinois Glass Co.

Charles A. Pierson, president of the former Standard Electric Stove Co., has been named vice president in charge of manufacturing and research for Standard Electric Mfg. Corp. Harry H. Venable, oldtime Standard Stove employee, has been made advertising and sales manager; Ellsworth L. Tait, former assistant treasurer of Libbey Glass Co., has been appointed treasurer.

Additional financing is being arranged for the new company in order to make possible increased production capacity which, in turn, will facilitate prompt delivery to Standard distributors and dealers throughout the country. The company also is preparing to expand its research department to a point where it will include an extensive study in the general field of electrical appliances.

The two new range models—"Captain" and "Colonel"—differ from each other only in size.

Captain, otherwise known as Model 1540, measures 40 inches long, 24 inches wide, and 36 inches high. It has a 16 x 19 x 14-inch one-piece oven, lined with porcelain enamel and having recessed burners and self-contained runners. It also has a large warming compartment and two utility cabinets.

The one-piece, acid-proof cooking top contains four surface burners which are available in either the Kalmax enclosed type or Speed Heat open type at no extra charge. Such items as cooker, clock, and light are optional and extra.

Westinghouse at the Home Show



Newest models in Westinghouse's home laundry equipment were displayed in the company's booth at the National Home Furnishings Show in Chicago. Spin-dry washer is in foreground, ironer model at the right.

Dept. Store Stages Crosley Range Sale

CINCINNATI — Following a demonstration of the Crosley "Mystic Oven" gas range to 60 members of the sales staff of May-Stern & Co., local department store, the store announced that it would stage a special introductory sale of the new ranges starting Jan. 21.

Feature of the demonstration was a complete turkey dinner cooked by Mrs. Jack Baker, wife of the personnel director of Crosley Radio Corp. It was the first meal which Mrs. Baker ever had prepared with this new range and its completely automatic oven.

To promote its sale of the new range, May-Stern & Co. will run advertisements in local newspapers and will devote one of its corner windows to a display of the new unit. The complete line of Crosley ranges will be featured on one side of the store's first floor. The ranges will be demonstrated by Miss Langley, who will serve hot meals to customers attending the demonstrations.

Parker Gets Chicago Post with Hotpoint

CHICAGO — James Parker, assistant manager of the electric range division of Edison General Electric Appliance Co., Inc., has been appointed Hotpoint refrigerator specialist in the Chicago district, according to an announcement of R. W. Turnbull, vice president in charge of sales.

After being graduated from the University of Chicago in 1928, Mr. Parker served briefly with the research department of Henri, Hurst and McDonald, local advertising agency, and then became an assistant in the office of E. P. Brooks, general merchandise manager of Sears, Roebuck & Co. in charge of retail stores.

A year later Mr. Parker was made general merchandising manager of Sears store in Rochester, N. Y. He resigned in 1931 to become assistant merchandise manager for Wieboldt stores, Chicago.

Mr. Parker left Wieboldt to form his own company, the Affiliated Buying Co. In 1936 he joined Edison G-E.

GENERAL CONTROLS SOLENOID VALVES For Every Fluid and Gas



WATER

K-20 two-wire, current-failure, quiet solenoid valve closes with the flow. High seating pressure . . . tight closing.



OIL-STEAM

The K-10 Lever-action Valve has 6 times the power of straight magnetic valves. Controls oils as heavy as No. 6 or steam at high pressure.



AIR-GAS

Like all Generals, the K-36 Magnetic Gas Valve is packless in construction, quiet in operation. Greatest existing size range from 1/2" to 6".



REFRIGERANTS

K-15 pilot-operated valves fully powered for instant opening. Controls Freon, SO₂, Methyl Chlorides, Ammonia.



Year 1938 CATALOG Complete engineering data on entire General line.

GENERAL CONTROLS
1505 Broadway, Cleveland, Ohio
267 5th Ave., New York City, N.Y.
1370 Harrison St., San Francisco, Calif.
450 East Ohio St., Chicago, Ill.
ORIGINATORS OF THE QUIET A. C. SOLENOID

Just Off The Press!

A completely new
Refrigeration and
Air Conditioning
Directory at a
new low price:

Contents of
1938 Directory

The new 1938 Directory (No. D-1) is designed especially for the buyer of refrigeration and air-conditioning products. The data is arranged in seven sections:

- (1) Manufacturers of air-conditioning systems and equipment;
- (2) Manufacturers of commercial refrigeration and equipment;
- (3) Manufacturers of household refrigeration and equipment;
- (4) Manufacturers of parts, materials, supplies, and accessories;
- (5) Jobbers, schools, and foreign manufacturers;
- (6) Index of manufacturers' names, including street addresses; and
- (7) Alphabetic cross index of classified products.

**\$1.00
per
copy**

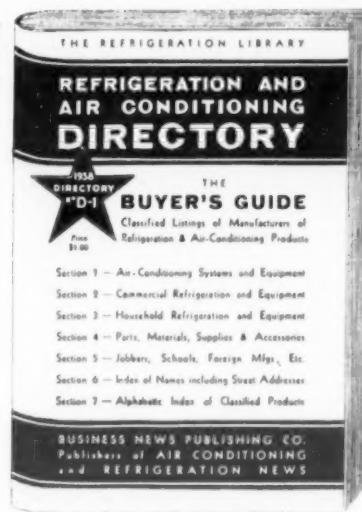
The 1938 Directory is an absolute necessity to anyone who has the responsibility for buying refrigeration and air-conditioning products. Manufacturers are listed and classified by products. This is an entirely new Directory. Every name has been carefully checked. Each type and variety of equipment is accurately described. This 252-page book is ready for immediate delivery and the price is only \$1.00 per copy. Use the coupon below.

Business News Publishing Co.
5229 Cass Ave., Detroit, Mich.

Enclosed is \$1.00. Send the 1938 Refrigeration & Air Conditioning Directory No. D-1, listing manufacturers by products.

Name
Street
City State

Note: Add 50 cents to the total amount of your order for BOOKS if shipment is to be made outside of the United States.



Air Conditioning

Application of New Forms of Radiant Heat In Homes, Offices Predicted by Mills

(Concluded from Page 1, Column 2) homes and other buildings with reflective insulation on walls and with indoor temperatures much lower than that to which people are now accustomed, Dr. C. A. Mills, professor of experimental medicine at the University of Cincinnati, stated that developments in this field forecasted a change to electric energy sources for heating, reduction in insulation needs, and changes in type of building construction.

In a paper, "Control of Heat Loss Through Radiant Means," Dr. Mills said that preliminary findings indicated that human comfort and animal growth and development can be regulated by control of body heat loss through radiant channels alone. He said that radiant heat would eliminate marked contrasts between indoor and outdoor air temperature both summer and winter, and would reduce the heating or cooling load on air-conditioning systems.

How washing air with water to which a germicide has been added contributes to the death of micro-organisms and renders bacterial control of air more effective was described in one paper. Another paper forecasted the use of an all-asbestos air duct instead of the commonly used sheet metal duct, for distributing air in air-conditioning systems. The paper cited the sound absorbing qualities, minimum frictional resistance to airflow, and insulating value of such ducts.

Declaring that the major effects of the atmospheric environment upon health and comfort "are directly related to thermal interchange between the human body and that environment," Dr. C. E. A. Winslow, professor of public health of Yale university and director of the John B. Pierce laboratory of hygiene, presented a scholarly analysis of physiological reactions and sensations of pleasantness under varying atmospheric conditions.

In a paper, "Condensation Within Walls," Prof. F. B. Rowley, director of the engineering experiment station, University of Minnesota, described a unique research project in which miniature test buildings were erected and subjected to various outside and inside air conditions to determine the effect of condensation within the walls, and to devise methods for its correction.

He concluded that solution to the problem rests on a better understanding of the effects of vapor pressures, and that "vapor barriers"

should be placed on the inside or warm side of a house. Use of high vapor resistance barriers, combined with an intelligent selection of insulating materials should go far to eliminate such condensation troubles in the future.

Edward Holt Gurney of Toronto, engineer and industrialist, was elected president of the A.S.H.V.E. He is the first Canadian in the history of the society to hold that office. Mr. Gurney is president of the Gurney Foundry Co., Ltd., and subsidiary companies of Toronto, one of the largest organizations in the Dominion engaged in the manufacture of heating and air-conditioning equipment.

Elected to serve with Mr. Gurney were J. F. McIntire of Detroit, vice president of the United States Radiator Corp., first vice president; and Prof. F. E. Gleeske, director of the Engineering Experiment Station, Texas Agricultural and Mechanical College, second vice president. A. J. Offner, consulting engineer, New York, was re-elected treasurer.

The following were elected by the A.S.H.V.E. as members of its governing council to serve for three years: A. P. Kratz, research professor of mechanical engineering, University of Illinois; J. H. Walker, superintendent of central heating, Detroit Edison Co.; N. D. Adams, superintendent of the Franklin heating station, Rochester, Minn.; and G. L. Wiggs, consulting engineer, Montreal, Canada.

Walter L. Fleisher, New York consulting engineer, was elected chairman of the committee on research of the A.S.H.V.E. J. H. Walker of Detroit was named vice chairman of the committee.

The committee on research of the A.S.H.V.E. is the central clearing house for fundamental research in air conditioning, heating, and ventilating.

Mr. Fleisher, the new chairman, is a graduate of the University of Pennsylvania and the holder of a number of important patents used in air conditioning, including a patent for the so-called "by-pass" system of air conditioning.

Mr. Fleisher is a member of the American Society of Mechanical Engineers, American Society of Refrigeration Engineers, and the American Society of Bakery Engineers, and he is the author of numerous scientific papers on air conditioning and ventilating.

All-Year System Going Into Armco Offices

MIDDLETOWN, Ohio—Refrigeration Equipment Co., Dayton, distributor of Delco-Frigidaire air-conditioning equipment, has been awarded the contract for installing a complete year-around air-conditioning system in the general office building of American Rolling Mills Co. here.

When completed, this installation will be one of the largest in the Miami valley.

Denver Dealer Has Educational Exhibit At Industrial Show

DENVER—An attempt to educate the modern Denver homebuilder to the advantages and price of various types of air-conditioning systems suitable for use under the climatic and atmospheric conditions which prevail here was made by McClure Air-Conditioning & Heating Co. when it sponsored a display booth at the recent Colorado Industrial Exposition.

The McClure booth, built on a wooden frame and having a dark green cloth backdrop, featured a display of four types of air-conditioning units and complete systems including evaporative cooling equipment, a spray system, a washed air unit, and a recirculating coil system.

Most of the equipment was connected with the auditorium's water system and was in actual operation.

Each unit or system was accompanied by a large sign giving its capacity, the type of building for which it was designed, and the names of several Denver buildings in which similar equipment had been installed.

A lecturer was in attendance at the booth every afternoon and evening to point out the features of each of the systems displayed and to answer any questions which spectators might have concerning air conditioning in general or the units displayed in particular.

"The ignorance of most people concerning the operation, benefits, and price of air-conditioning equipment is amazing," declared one McClure official. "Most people seem to think that the price of any such equipment is prohibitive, and that the air is cooled just like water is frozen in a refrigerator. In guessing the price of air-conditioning equipment, all of the people with whom I have talked have over-estimated the price by at least 300%, and none of them have had a real idea of how any of the systems operated."

It is estimated that more than 2,000 people stopped to examine the equipment in the McClure booth, and the company added many names to its prospect list.

The McClure organization is furthering its educational efforts through distribution of several booklets on the subject.

"We feel that the primary problem in selling air conditioning to the people of Denver," said one McClure representative, "is the problem of acquainting these people with what air conditioning can do for them and how they can obtain these benefits without straining their incomes."

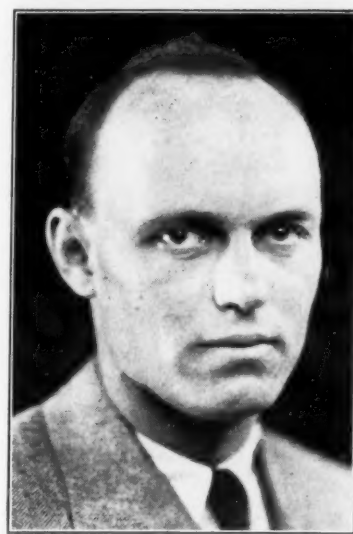
Twin-Clock Thermostat Is Introduced by Perfex Co.

MILWAUKEE — Perfex Controls Co. has introduced a new twin-contact clock thermostat, modernistic in design, consisting of a timer clock and two independent thermostats controlling night and day temperatures.

Temperature settings are made by dials at the top of the twin thermostat wall mounting. Range of the thermostats is from 55 to 85° F., with extra 15° lower and 15° higher settings.

Timer clock may be attached to the twin thermostat, or may be installed separately. With the combination, a transformer is furnished, and both units are internally wired.

McLenegan Heads G-E Conditioning Institute

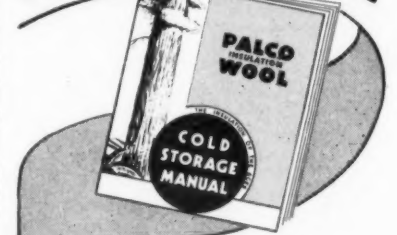


BLOOMFIELD, N. J.—D. W. McLenegan, assistant commercial engineer of the General Electric air-conditioning department, has been named manager of the General Electric Air Conditioning Institute by J. J. Donovan, department manager. R. D. Wood will assist Mr. McLenegan with the institute's activities.

The institute has been in existence for three years, during which time it has carried on independent studies related to heating and air conditioning, and acted as the medium through which training activities have been carried on.

Coincident with the new appointments, Mr. Donovan announced that the institute's activities will be enlarged.

For Everyone Interested In CONSERVING LOW TEMPERATURE



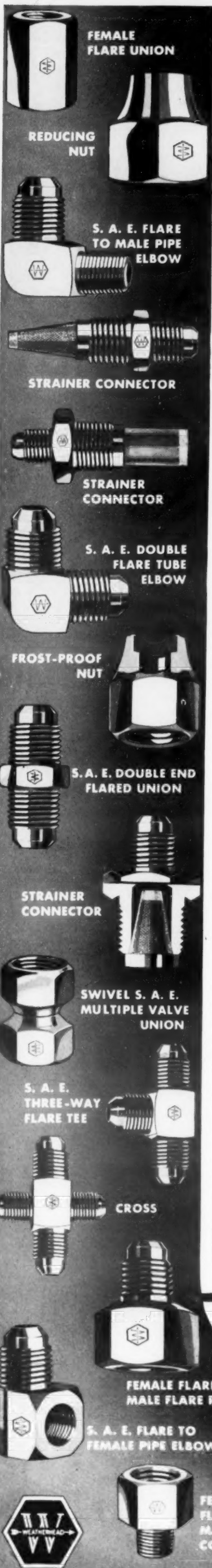
Send now for this New 16-page manual that tells why, how and where to install PALCO WOOL, the Redwood bark insulation that provides PERMANENT THERMAL EFFICIENCY (0.255 B.t.u. Peebles) at lowest possible cost.

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Valves and Fittings
The Standard of the Industry

Kerotest Manufacturing Co.
Pittsburgh, Pa.



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STOCKED by leading jobbers everywhere, Weatherhead valves and fittings include all necessary and essential parts for refrigeration installations. Whatever you want will be found in the new refrigeration catalog. Have you got your copy?

300 EAST 131st STREET

Detroit Radio Dealer Cited in FTC Case

WASHINGTON, D. C.—Federal Trade Commission has issued a complaint charging Orville J. Bond, operating as Zephyr Radio Co., 13139 Hamilton Ave., Detroit, with unfair competition in the sale of radio receiving sets and parts.

The commission charges that Mr. Bond, in newspaper, magazine, circular, and radio broadcast advertising, made representations to the effect that his radio sets are sold and delivered to dealers and the public for \$6.95 complete with all necessary working parts installed for satisfactory world-wide reception.

According to the commission, such sets are not sold and delivered to retailers and the public at that price, and are not equipped for clear, uninterrupted reception of world-wide broadcasts.

The complaint charges violation of Section 5 of the Federal Trade Commission Act.

Georgia Power Co. Sets \$2,250,000 Goal for '38

ATLANTA—A quota of \$2,250,000 worth of major electrical appliances and lamps has been set by Georgia Power Co. for its merchandise departments in 1938.

Major appliance marks at which the company is aiming this year include: refrigerators, 7,200 units; electric ranges, 4,800.

At Frigidaire's Mid-Winter Meeting



Frigidaire men from all sections of the country are shown here as they met at the company's annual mid-winter convention in Dayton. (1) Phil Abery, Kansas City branch manager; "Duke" Riehle, Buffalo branch manager; and W. H. Forgy, Byars-Forgy, Tampa, Fla., distributor. (2) Phil Bratton, Fort Worth-Dallas district manager, and Herman Heller, assistant

sales manager for J. J. Pocock, Inc., Philadelphia. (3) Fred Davison, manager of Frigidaire's Nashville branch; Harry Harbison, Baltimore-Washington, D. C., manager; and Frank Lyons, assistant director of public relations. (4) Rube Trant, Norfolk, Va.; Lou Kimball, general sales manager, Boston; and Dan Packard, department and furniture

store division manager, Dayton. (5) New England branch men: Frank Doten, assistant manager; S. M. Clough, newly named sales manager; and John Pfeil, general manager. (6) Walter Cooke, manager of Graybar Electric, Albany, N. Y., and Larry Simcock, metropolitan sales manager, Boston. Crews are now taking the 1938 Frigidaire story to dealers.

Dayton Retail Sales Up 12.4% In 1937; December off 8.3%

DAYTON—Local retail sales during 1937 were 12.4% above sales for the previous year, according to Brooks H. Harmon, secretary of the Dayton Retail Merchants Association, despite the fact that sales during December, 1937, were 8.33% below sales during the same month of 1936.

The drop in December sales was blamed largely on current local unemployment conditions. Mercantile employment, however, showed a gain of 10.51% during the year, and total payrolls for the city gained 26.89%.

Sales of "luxury" items fell off.

BRUNNER

Send for the New
REFRIGERATION CATALOG

Seven Models of Compressors
Fifty-eight Models of High-
sides from 1/4 H. P. to 15 H. P.
BRUNNER MANUFACTURING CO.
UTICA, N. Y.

'Padding' of Cooperative Advertising Bills Opposed by Cleveland Dealer Group

CLEVELAND—Members of the Cleveland Retail Appliance Dealers Association were urged at their last meeting to oppose two pieces of proposed legislation—a city licensing plan which would license appliance dealers, among other merchants, at the rate of \$10 a year, and a bill introduced into the state legislature which would bar replevin action against any customer who goes on relief.

George W. Walker, secretary of the association, warned the dealers that the city's licensing plan might be only the beginning of a municipal tax program which might eventually become very burdensome to appliance dealers as well as other retailers.

Association members also adopted a resolution criticizing the action of dealers in padding advertising bills to distributors and the Cleveland Electrical League for their share of the expense of cooperative appliance advertising. This resolution provided that a committee be put at the disposal of the distributors and the league in an attempt to work out a way of stopping this practice.

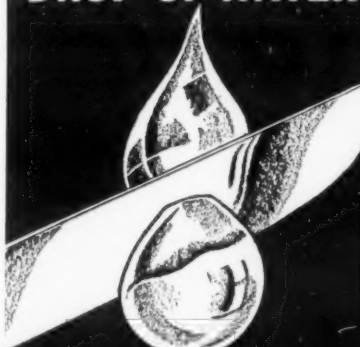
It was explained to the dealers that some neighborhood papers were aiding unscrupulous dealers by cutting their published advertising rates in half through means of a secret rebate. In such cases, it was pointed out, the dealer, after having collected 50% of the expense (based on the published rate) from the distributor and 25% more from the league, actually makes a profit on his advertising.

Mr. Walker denounced this practice and declared that it was a poor way in which to bid for distributor cooperation. Dealers, he said, must learn to play fair themselves if they expect other factors in the industry to live up to higher ideals.

Ralph H. Jones, secretary of the Electrical League, explained the league's situation, and appealed to dealers to help correct advertising abuses. He also reported that the league has already spent hundreds of thousands of dollars in cooperative advertising designed to aid dealers in selling appliances.

One dealer who sent in invoices totaling \$145 during an electric clock drive, stocked only two units.

NOT EVEN ONE
DROP OF WATER



IN A POUND OF
Artic

DU PONT METHYL CHLORIDE

NO MOISTURE PROBLEMS with Artic. It's bone-dry; and you can easily remove with a dryer moisture accidentally introduced in charging. Artic is easy to service right in kitchen or store. Non-irritant. Operates at low, positive pressures. Doesn't corrode. And Artic is easy to hold; low pressures mean low leakage. You can always get Artic without waiting. Place your order today! And write for the helpful Artic Technical Booklet and the Artic Service News.

For prompt delivery, Artic is carried in standard containers in all principal cities.

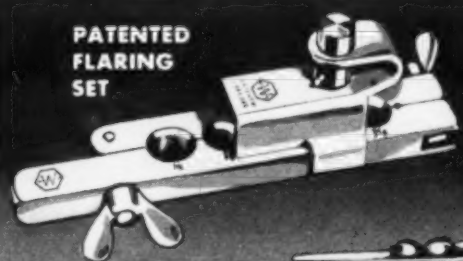


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Newark, New York, Philadelphia, Pitts-
burgh, San Francisco

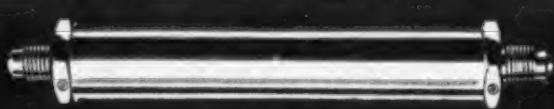
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WEATHERHEAD valves and fittings are of the highest quality. Acceptance of them as original equipment by leading manufacturers the world over is proof of their superior design and utility. If you need a special valve or fitting, send us the specifications. Weatherhead parts are always better.

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FLARING
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SCALE TRAP



IMPROVED TUBE
CUTTER



DEHYDRATOR



CHARGING
HOSE



PACKLESS
LINE
SHUT-OFF
VALVE



THREE-WAY
SHUT-OFF
VALVE



TWO-WAY
SHUT-OFF
VALVE



RECEIVER
TANK VALVE



PACKLESS
ANGLE
SHUT-OFF
VALVE



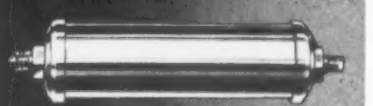
ANGLE
SHUT-OFF
VALVE



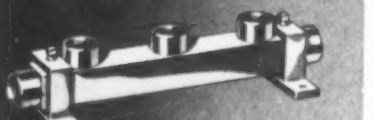
FLANGE
COMPRESSOR
VALVE



TESTING VALVE



ASBESTOS BAG
LINE FILTER



MANIFOLD

UNCOVERING THE CONVENTION

NOTES ON THE A.S.R.E. ANNUAL MEETING

BY PHIL B. REDEKER

Crosby Field, An Engineer - - And Something More

Few men have brought to the office of the A.S.R.E. presidency a record of personal achievement comparable to that of Crosby Field, who takes office for the current year.

Widely respected as a refrigerating engineer, Mr. Field is head of the Flakice Co., but that is only part of his business activity. He designs and perfects productive machinery, and is the man who put in the famed automatic machinery for the Brillo Co. (ask your wife what "Brillo" is) which is said practically to operate itself.

But these business activities apparently fail to keep dynamic Mr. Field fully occupied, as he finds time to help run the New York Ordnance District of the U. S. Army (he has recently been promoted to the rank of Colonel), to be active in many engineering societies (A.S.R.E., A.S.M.E., and the Chemical Engineers), and to write an occasional treatise on some new scientific development.

A man so active and brilliant could well be forgiven if he had some faults of personality. But Mr. Field is as pleasantly personable as genial Harry Edwards—and that's a real compliment.

He has time to be gracious to everyone, and while positive in his opinions, he is a good listener. And with his tact and gift of getting things done, Mr. Field should help bring the society along to new measures of successful operation in the current year.

Harry Williams Springs A Surprise

Harry Williams, retiring president of the society, waited until the final day of the convention to make it generally known that he is leaving Frigidaire to become chief engineer for National Cash Register Co. It is the unanimously expressed hope of the entire society that the competent and affable Daytonian and his charming wife will continue to attend A.S.R.E. meetings.

A New Deal Agency Does Some Good

Prof. B. H. Jennings of Lehigh university was telling Ed McGovern of R. & H. Chemicals that the National Youth Administration (a New Deal project which gives employment to students) had done much of the work in the preparation of the tables of the properties of aqua-ammonia solutions.

Ed had been speaking of the expense to which R. & H. and Kinetic Chemicals had gone in getting similar tables for methyl chloride and Freon.

What with the present strained relations between the du Pont interests and the Administration, it hardly seemed prudent to suggest that maybe the N.Y.A. could have done the table-compiling for the two du Pont subsidiaries!

Mr. Timmerman Promises Some Real News

W. M. Timmerman, G-E engineer who has taken a leading part in the formulation of industry rating standards and performance codes, intimated that a project upon which all factors have been working quietly but arduously for some time may be made public within the next few weeks.

When it does, you can read all about it in AIR CONDITIONING & REFRIGERATION NEWS.

'Charlie' Logan Wins a Permanent Job

It begins to look as if "Charlie" Logan will be permanent chairman of the entertainment program of all A.S.R.E. conventions held within several hundred miles of the Quaker City, where he is a member of York's field corps.

"Charlie" does such a swell job of keeping the ball rolling and everybody happy that he is practically irreplaceable. Mr. Logan is also an indefatigable recruiter of new members.

'Jack' Forbes Gets Some Colossal Ideas

J. S. "Jack" Forbes of Kerotest Mfg. Co., vice president of the Refrigeration Supplies & Parts Manufacturers Association, was brought to the A.S.R.E. banquet by Ted Wilson and "Wid" Siegfried of Kerotest's New York office.

"Jack" is still plumping strong for a bigger and better refrigeration show, and probably got some good ideas from the exposition at Grand Central Palace.

How to Tell What You're Fitted to Be

Possibly lured into staying by a puzzler of a subject and the unusual name and appearance of the speaker (Johnson O'Connor, a young man sprouting a Van Dyke beard) the largest "Welcome A.S.R.E. Luncheon" crowd in some years sat attentively through a talk that was as enlightening as the speaker was entertaining.

Prof. O'Connor is from the Human Engineering Laboratory of Stevens Institute of Technology, and his sub-

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TRADE-MARKS REGISTERED

Gay and Serious Moods at A.S.R.E. Conclave



J. H. H. Voss, New York, manufacturer of the compressor valve which bears his name and a veteran A.S.R.E. member, is also a candid camera addict, and we are indebted to him for these photographs taken during last week's A.S.R.E. sessions. (1) Mrs. Voss dances with Dr. Seligman, German refrigeration expert now

residing in this country. (2) F. R. Zumbro of the Frick Co. cuts some fancy capers. (3) Louis Morse, York executive engineer, in characteristic pose. (4) Harry Williams, George Hulse, Gardner Poole, and Harry Edwards, all stalwarts of the society. (5) L. L. Lewis, Carrier air-conditioning engineer.

ject was "Engineering Humanics," which is apparently a new project designed to demonstrate the aptitude of adolescents (and adults for that matter) for a particular profession or career. In brief, it is the scientific substitute for the old-time phrenologist.

Procedure followed in developing

this science at the Stevens laboratory was something as follows: an intensive study was made of successful men in each of several professions and business fields. This data was assembled and correlated in such manner as to show just what characteristics were apparently part of the essential equipment necessary

for success in each given line of endeavor.

This done, certain types of tests were created for determining just which of these characteristics were strongest in the persons being tested. As with all experiments in the social sciences, 100% results have not been obtainable, but the theory does seem to have worked out in a great many cases, according to thorough studies made by the Stevens researchers.

Prof. O'Connor illustrated some of his tests (which apparently anyone may take by applying to the institute). He also described a book that came out of this work; it is a vocabulary "extender," and it seemed like something that almost everyone might read with profit.

Round-Up of Familiar Faces

Snapshots at random of old friends:

Dan Wile, who broke away with difficulty from his interesting new work with Savage Arms, getting an enthusiastic greeting from old friends.

A. H. Eustis of Virginia Smelting Co., who gave the writer a drubbing in the A.S.R.E. tennis tournament last June, promising a return match if a foot which he injured in a foot race last summer heals sufficiently. Mr. Eustis is more than 60 years old! They must really have something in that New England climate.

A good-sized G-E delegation, including Chester Lichtenberg, A. R. Stevenson, and W. L. Knaus, on hand to hear O. C. Rutledge of their company, who was a speaker at the first day's session.

STREAMLINE FOR SAFETY AND ACCURACY IN PIPE FITTINGS



REFRIGERATION AND AIR CONDITIONING

● The STREAMLINE Solder Fitting is the only solder type fitting on the market in which POSITIVE PROOF of a leak-proof joint can actually be seen without resorting to a pressure test.

There is no guess work about STREAMLINE. The solder inserted through the feed hole (an exclusive feature) completely seals the bonding surfaces, and its appearance at the end of the fitting assures you, beyond all doubt, that the joint is refrigerant proof, that vibration cannot work it loose, and that it is permanent and actually stronger than the tube itself.

STREAMLINE Forged Brass Fittings are furnished in complete range in couplings, tees, elbows, etc., with male and female ends and in reducing sizes. Send for Catalog and Price List 2003 illustrating our complete line of Valves, Fittings (solder type and flare), Dehydrators, Strainers, etc., for Mechanical Refrigeration.

MUELLER BRASS CO.
PORT HURON, MICHIGAN

DEALERS!...IT'S HERE!

A ROOM COOLER
with Everything but High Price!



GOVERN AIR
ROOM COOLER

• Designed IN a hot climate FOR a hot climate; built to fit the moderate budget without sacrifice of quality, efficiency or appearance. Welded steel frame; all standard parts; rubber mountings; walnut cabinet. On ball-bearing rollers for easy moving from one room to another. Cools, ventilates, circulates, dehumidifies and cleanses the air. Low-cost operation . . . and a low first cost that makes every family of average means a prospect!

GOVERN AIR CORPORATION 603-5 WEST MAIN STREET OKLAHOMA CITY, OKLA.

CURTIS Water Jacketed Cylinders Assure Better Lubrication—Increase Efficiency

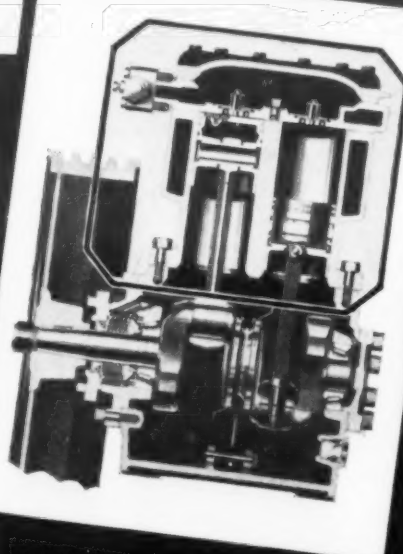
It costs more to make water jacketed cylinders for Curtis compressors, but good engineering practice demands just such extra refinements in the interests of a fine product.

As in an automobile engine, water jackets keep the cylinders cooler, a prime factor in assuring better lubrication and proper oil consistency. Efficiency is likewise increased, for more gas can be compressed at each stroke of the piston, since cooler gas is of greater density.

In such ways has the outstanding performance record of Curtis compressors and condensing units been developed—a record proven in thousands of installations. Sell Curtis units—available in capacities from 1/6 to 30 H.P., air and water cooled, precision engineered to deliver economical, care-free performance.

Write to Curtis for complete information.

CURTIS REFRIGERATING MACHINE CO.
Division of Curtis Manufacturing Co.
1912 KIENLEN AVENUE ST. LOUIS, MO.



CURTIS
"Builders of Condensing Units Since 1922"

Represented in Canada by
Canadian Curtis Refrigeration Co., Ltd.
20 George St., Hamilton, Ont., Can.

New Uses of Refrigeration in Food Field Up for Study at ASRE Meeting

(Concluded from Page 1, Column 4)
application in food technology. It is also expected that some of the newer uses of refrigeration may be demonstrated through means of equipment available at Pennsylvania State College.

Opening session of the meeting was devoted entirely to the subject of refrigeration of foods. In addition to hearing how the practice of pre-cooling fruits and vegetables before shipment is creating a great new market for refrigeration, (a more complete report of which is published on page 9) the engineers also heard Dr. B. E. Proctor of Massachusetts Institute of Technology speak on "The Field of the Food Technologist."

The food technologist must understand both the chemistry of foods and the engineering of food processing, said Dr. Proctor.

The four-year course in food technology at Massachusetts Institute of Technology is designed to provide students with such training. The courses embody much study of chemistry and biology, and also emphasize physics and mathematics. There are two required courses in food engineering. The student is required to write a thesis to graduate.

It is essential, said Dr. Proctor, that these students work during their vacations in food processing plants, to get actual experience for their intended careers. He suggested that this thought be carried through for all students engaged in technical training.

The field for these students, said Dr. Proctor, is in research, testing, and engineering work in such industries as quick freezing, corn refining, canning, and meat packing.

Dr. Proctor described a new use of refrigeration, in the keeping and preserving of mother's milk. This enterprise, conducted by philanthropic organizations, is said to have saved a number of infants' lives.

In this project, milk which is collected from nursing mothers who have milk to spare is pasteurized, frozen, and packed in small containers. It is used for babies born prematurely, and for babies who can't get milk.

Frozen Foods May Alter Distribution Methods, Heddens Predicts

Noting that General Foods had reported a 60% increase in sales of Birdseye Frosted Foods during 1937, W. P. Heddens, chief, bureau of commerce, Port of New York Authority, declared that frozen foods and other such changes may have a marked effect on food distribution technique in the not-too-distant future.

Mr. Heddens foresees the necessity of food distribution agencies contracting for large quantities of frozen foods far in advance. This, he pointed out, would naturally limit the number of food distribution agencies.

Two other significant changes in food distribution practice has been the policy of food chain store managements, who are buying in carload lots and shipping to regional warehouses, rather than to metropolitan terminal points. This is reducing terminal warehousing.

Another change is in the general transportation of milk by truck, rather than in railroad cars.

Expansion Valves Code Being Drafted; Cooling Standards Completed

At the conclusion of the first day's session, Chester Lichtenberg of General Electric Co., chairman of the A.S.R.E. Standards Committee, presented the report of the Standards Committee on progress towards rating codes and other standards.

Now being drafted, said Mr. Lichtenberg, is a standard method of rating and testing expansion valves. It is expected that work on this standard will be completed for the March meeting of the committee which is drafting it.

With respect to a standard for refrigerant containing vessels, Mr.

Lichtenberg pointed out that the A.S.M.E. code for unfired pressure vessels is being revised currently, as is the A.S.A. safety code for refrigeration. These will provide standards for refrigerant containing vessels, said Mr. Lichtenberg.

The code of minimum requirements for air conditioning, prepared by a joint A.S.R.E.-A.S.H.V.E. committee, has been under consideration, and Mr. Lichtenberg recommended its review by the Standards Committee and publication before the society, so that it might be approved by the Council, in accordance with the accepted procedure of the Society.

This recommendation was criticized by W. A. Fleisher, air-conditioning engineer, who was a member of the A.S.R.E. committee that framed the code. He pointed out that the committee had worked long and arduously on the code, and that the A.S.H.V.E. had already passed it, and declared that he saw no reason why it should not be presented immediately to the Society, so that it could be approved and put in use as quickly as possible.

Louis B. Morse of York Ice Machinery Corp., a past president of the A.S.R.E., replied to Mr. Fleisher by pointing out that the procedure was established as a rule in the Society, and had to be followed.

Ruthenburg Cites Need For Closer Study of Industrial Relations

Industrial relations are today a matter of prime importance to everyone in this country, for the questions raised during the past year in the industrial relations field are leading into the issue of whether or not this country will continue to operate as an industrial democracy, or by what has been generally known as the "American way," the members of the A.S.R.E. heard from Louis Ruthenburg, president of Servel, Inc., who was guest speaker at the opening day's session of the society's annual convention.

Because of the importance of the subject, said Mr. Ruthenburg, it is essential that thinking and talking about industrial relations should be clarified and defined.

"A discussion of industrial relations should not be narrowed down to the bare essence of employer-employee relationship," declared Servel's president, "but should be really comprehensive, taking in all the ramifications of the subject."

"In the narrower approach to the subject there are two schools of thought:

"(1) Natural antagonism between employer and employee;

"(2) Natural partnership of the laborer, management, and the stockholder.

"The objective of the natural partnership," stated Mr. Ruthenburg, "should be proper service to the consumer."

Labor must not expect to be given greater wages without contributing to greater productive efficiency, declared Mr. Ruthenburg. It is now generally agreed by economists that probably the greatest contributing factor to the present business recession was the arbitrary increase in wages and reduction in working hours, without any increase in productive efficiency. Thus "real wages" (buying power) are actually reduced.

"Only to the degree in which we increase our ability to produce, can we improve the laborer's standard of living," Mr. Ruthenburg explained. "It is but natural law that you can't have more than you can produce."

Pointing to the building trade, where wages have been arbitrarily increased, Mr. Ruthenburg showed that because of this condition it is difficult for the average man to obtain a suitable dwelling (one of the three absolute necessities of living), and declared that this lowered standard of living might well extend to other necessities and luxuries if such a procedure is followed in all industries.

"An income of \$3,600 a year per family has been set as the goal for a satisfactory standard of living," asserted the Servel chief executive. "Yet, it is obvious from figures obtainable on our national income that the only way in which this can be

done is by increasing productive efficiency."

With respect to collective bargaining, there are two schools of thought, said Mr. Ruthenburg:

(1) The natural partnership of employer-employee through means of a locally controlled and operated union.

(2) A national collective bargaining agency or union.

"If the majority of employees honestly want it, and if the agency is made as responsible as the corporation, a nationally-controlled bargaining agency is all right," said Mr. Ruthenburg.

"However, such a national agency should not harbor agents or influences which are subversive in nature, and its directing heads should make every effort to understand the problems of the businesses with which they deal."

Crosby Field New ASRE President; Poole, Baker Are Vice Presidents

Officers elected by the American Society of Refrigerating Engineers at the December business meeting for 1938 and taking office at the recent meeting are: president, Crosby Field, New York City; vice presidents, Gardner Poole, Boston, and Charles T. Baker, Atlanta.

New directors of the society, elected for a term of three years, are: Arthur W. Ewell, Worcester, Mass.; William R. Hainsworth, Evansville, Ind.; William L. Holladay, Los Angeles; Charles R. Roe, New York City; and A. B. Stickney, Chicago.

G-E Opens New Office Building on Pacific Coast

LOS ANGELES—General Electric Co. has opened its new \$700,000 building at 212 North Vignes St. here.

In addition to housing the district sales offices of the company, the new building will be the headquarters of the Los Angeles office of the G-E appliance and merchandise department, and the General Electric Contracts Corp., as well as the Los Angeles office and warehouse of the General Electric Supply Corp., the company's wholesale distributing subsidiary.

Designed to meet the full needs of a modern industrial enterprise, the structure is unusual in many respects of construction. The heating is accomplished entirely by the use of electricity and represents a connected load of 589 kilowatts.

"In-the-wall" type of forced convection heater is used, of two, three, and four kilowatts capacity. Approximately 100 of these heaters are used, each delivering air at a velocity of between 710 and 750 f.p.m. with a volume of 200 cubic feet per minute. The outlet maximum temperature is 135° F.

By placing these heaters 8 feet above the floor the circulation of air is accomplished most efficiently, accumulating as it goes the heat from the lighting units. The generated heat from the latter is usually sufficient to maintain temperature in the rooms.

The entire system is thermostatically controlled and operates in conjunction with the lighting system to utilize all the heat generated. Larger heaters of similar style, employing the G-E fin-type Calrod units, are used in the counter room and the radio repair room.

George Kiley, Veteran Sales Executive, Dies

PHILADELPHIA — George H. Kiley, a pioneer in the radio industry and one-time eastern refrigerator and radio sales manager of General Household Utilities Co., died here Jan. 20 following a heart attack. He was 48 years old.

Entering the radio field in its early days as vice president and sales manager of Farrand Mfg. Co., speaker manufacturer, Mr. Kiley through his merchandising efforts built up a distributor and dealer organization which handled sales of between 40,000 and 50,000 speakers a month. Elected a director of Radio Manufacturers Association, he helped formulate many early industry policies.

Later he became general merchandising manager of Radio Corp. of America, in which post he served until he retired to accept the RCA distributorship franchise for the Philadelphia area.

After several years in this field, he joined General Household Utilities Co. as eastern sales manager of refrigerators and radios. A short time ago he joined the Electro-Acoustics Products division of Magnavox Co., Fort Wayne, Ind., as sales manager, a post he held until his death.

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Air Conditioning

Tests Indicate Proper Velocities And Diffusers Improve Air Distribution in Rooms

BY F. O. JORDAN

NEW YORK CITY—Presented by D. J. Stewart, manager, electrical division, Barber-Colman Co., before the annual meeting of the American Society of Heating and Ventilating Engineers, the paper on "Air Distribution From Side Wall Outlets" merits the attention of the air-conditioning engineer because it deals with the important problem of air distribution within the air-conditioned space.

Importance of air distribution within the conditioned room is second to none, because of the well-known fact that regardless of the accuracy of the air-conditioning load estimate, the correctness of the air-conditioning equipment selection, and the efficiency of the design of the duct system, the effect of the entire installation will be intense dissatisfaction if the distribution of the conditioned air within the conditioned rooms results in alternate drafty and stagnant areas, and in "spotty" distribution of temperature.

Furthermore, authentic design data upon air distribution in the room is not so plentiful as information upon most of the other branches of air-conditioning engineering.

While the tests upon which this paper is based may scarcely be said to have brought any new principles to light of day, they are of value because their results substantiate principles already known, and because they furnish additional working knowledge for the use of the air-conditioning engineer.

WHAT TESTS DEMONSTRATED

Briefly, the points brought out by these tests may be listed as follows:

Cold air tends to fall.
Air must be delivered into the room at a velocity which will result in distribution over the entire room before it can fall downward into the occupancy level.

Air must not be delivered into the room at so high a velocity that it will strike the opposite wall with sufficient force to spill downward to the floor at an appreciable velocity.

The directional type supply grille may be of considerable assistance in obtaining air distribution because of its tendency to throw cold air much further at a given velocity of entry.

Consideration of all the above

facts reveals that the entry velocity must be of the proper value to distribute the air to the opposite wall without permitting it to fall into the occupancy zone, and without allowing it to impinge against the opposite wall with sufficient velocity to result in an undesirable draft down that wall.

For colder air, for a greater room width, and for a lower ceiling height, a higher velocity at the grille will be required.

By employing a supply grille with horizontal vanes set at a slightly upward angle, distribution under given conditions will be obtained at a considerably lower velocity at the grille.

HOW DRAFTS AFFECT US

The degree of discomfort from drafts depends upon the velocity of the air impinging upon the occupant, upon the temperature of the room, and upon the differential between room air and air stream.

Since certain room temperatures are prescribed for comfort, and since some air velocity must be maintained in order to obtain distribution, this relationship indicates that the temperature of the air stream must be very little below room temperature when it impinges upon the occupant.

This fact explains the reason that the cold incoming air must be distributed over the room above the occupancy level and allowed to be warmed by mixing with room air before it comes in contact with the occupant.

The speaker called attention to the assistance of the properly designed grille in obtaining a mixing effect by explaining that with such a grille the air stream will be so thoroughly mixed with room air which it aspirates that its tempera-

ture will rise as much as 15° within 5 feet of the grille.

THE PROBLEM

The problem of air distribution was explained by Mr. Stewart in this way:

The engineer who selects the air-distribution outlets, pointed out Mr. Stewart, usually has the following information to guide him:

- (1) The room dimensions are known;
- (2) A temperature differential between the entering air and the control temperature of the room has been selected;
- (3) The air volume required for supplying the necessary cooling has been computed;
- (4) The maximum velocity permissible from the standpoint of noise has been calculated;
- (5) The desired grille mounting height is known, either exactly or within rather close limits;
- (6) The desired minimum room temperature is also known.

Problem is to find the smallest outlet, or outlets (bearing in mind the noise limitation on velocity) which will give satisfactory air distribution. The range of selection is often limited and the entire problem complicated by additional considerations such as beamed ceilings, large posts or other obstructions, non-rectangular rooms, and the location of available space for the outlet itself or the ducts leading to it.

It is often possible, declared the speaker, to find two or more arrangements of size and location of outlets which will be satisfactory. Generally, the one involving the smallest total outlet area is the most satisfactory.

SQUARE ROOMS BEST

In a square or rectangular room with outlet and return grilles on the same wall and without greatly localized heat sources other than occupants, experience shows that it is usually only necessary to know that sufficient cooling air will reach the far end of the room.

The air discharged into the room, in finding its way back to the return grilles, necessarily passes below the entering air. The large cross-section available for the return air insures that the velocities are low, and the symmetry of the rectangular room insures that the cooling air will be well distributed.

Even for this simple room, said Mr. Stewart, there is no single value for the velocity at the rear wall which will satisfy all cases. For example, if the rear wall is a large source of heat gain, the velocity down it should be considerable greater than if it is thoroughly insulated and therefore a source of little or no heat gain.

BACK WALL VELOCITY

Furthermore, the proper velocity depends to some extent upon the type of occupancy. However, experience indicates that an average velocity of 30 f.p.m. is about the minimum that can be permitted down the back wall. A slightly lower value will be satisfactory if there will be no heat gain from that wall.

Maximum permissible velocity down the back wall is controlled by considerations of the discomfort produced upon occupants of the room seated near that wall, explained Mr. Stewart.

The temperature difference of the air falling down the back wall will, in the case of most outlets which are otherwise satisfactory, rarely exceed 1° F. Accordingly, the maximum permissible velocity, if the room temperature were 80, would be 100 f.p.m.; and if the room temperature were 75, would be 75 f.p.m.

It is well to keep this particular velocity considerably on the low side, since air which comes down the back wall is deflected at the floor and returns along the floor where the occupant is particularly sensitive to a feeling of discomfort from a low temperature.

MAXIMUM LIMIT

Accordingly, an arbitrary requirement was made that the average velocity down the back wall should not exceed 75 f.p.m.

Regardless of the air temperature, said Mr. Stewart, there is some air velocity, even if momentary, which is uncomfortable if only because it disturbs papers and other light articles or the occupant's hair.

This maximum acceptable velocity is believed to be in the neighborhood of 200 f.p.m., and accordingly one requirement for a satisfactory outlet is that the maximum air velocity within the zone of occupancy shall not be more than 200 f.p.m. as measured with an instrument which

indicates approximately the momentary velocity.

Tests were run by delivering the air through openings of various sizes, and by delivering the air through grilles of the same dimensions. These comparative results are shown by Tables 1 and 2 respectively.

HIGH ROOM—LITTLE TROUBLE

"The first two of these are interrelated to a considerable extent. For example, in a high room with the grille mounted near the ceiling there will be little or no difficulty due to cold air dropping into the occupancy zone, regardless of all other considerations.

"There remains, however, the problem of making certain that the cooling reaches the far end, although the greater mounting height tends to increase the throw.

"On the other hand, for room heights usually encountered (except in theaters and auditoriums) the throw is not materially affected by the room height.

"If the outlet is close to the ceiling, the lessened friction at the upper side of the air stream tends to hold the cold air up. However, if the grille has a considerable upward deflection and is located adjacent to the ceiling, there will be a tendency for the air to rebound from the ceiling and drop into the occupancy zone.

GRILLE PLACEMENT

"It is apparent that the proper type of grille is much affected by the distance between the grille and the ceiling.

"As might be expected, a large volume of air has more tendency to drop into the occupied zone than a small volume of air. The larger volume will have a longer throw, all other things being equal. As previously pointed out, a room may be unsatisfactory because too much cold air drops down into the occupancy zone, or because it strikes the rear wall and follows that down into the occupancy zone.

(Concluded on Page 19, Column 3)

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Table 1—Performance Characteristics for Air Discharged from an Open Hole
(Room Length, 40 ft.; Velocity, 1,000 f.p.m.)

	11x11	16x8	19x7	28x5	36x4
1 Nominal Size	11x11	16x8	19x7	28x5	36x4
2 Aspect Ratio	1.00	2.03	2.78	5.84	9.54
3 Frame Area (sq. ft.)	0.803	0.847	0.879	0.915	0.920
4 Frame Area/Duct Area	0.956	0.954	0.950	0.940	0.920
5 Supply Volume (c.f.m.)	803	847	879	915	920
6 Room Temperature, degrees F.	80	80	79	81	82
7 Supply Temperature Diff., degrees F.	-20	-20	-19	-20	-20
8 Maximum Peak Velocity†, f.p.m.	300	250	250	300	350
9 and Location, feet	20	15	20	20	15
10 Average Velocity Same Location†, f.p.m.	225	200	200	200	300
11 Maximum Velocity on CL (Kata), f.p.m.	130	170	142	245	208
12 Location, feet	25	20	20	19	20
13 Temperature Diff., degrees F.	-2.5	-3.3	-3.1	-4.0	-3.4
14 Velocity at (1) (Kata), f.p.m.	40	40	20	25	45
15 Temperature Diff., degrees F.	-0.5	+1.0	+1.5	0	-0.5
16 Velocity at (2) (Kata), f.p.m.	25	20	38	20	30
17 Temperature Diff., degrees F.	-0.5	+1.0	+1.5	0	0
18 Velocity at Rear Wall (Kata), f.p.m.	100 up	60 up	75 up	90 up	88 up
19 Temperature Diff., degrees F.	-1.7	-1.0	-0.8	-2.5	-0.9
20 Distance from Opening, feet	28	25	27	23	28
21 Distance from Opening, feet	25	26	26	27	23
Primary Jet Drops to 150 f.p.m.					

Note: Items 8 through 19 are for 5-ft. conditions.

†Data with deflecting vane type velocity meter.

Table 2—Performance Characteristics for Air Discharged from a Grille
(Room Length, 40 ft.; Face Velocity, 1,000 f.p.m.)

	11x11	16x8	19x7	28x5	36x4
1 Nominal Size	11x11	16x8	19x7	28x5	36x4
2 Aspect Ratio	1.00	2.17	3.04	6.94	12.2
3 Core Area (sq. ft.)	0.677	0.711	0.729	0.723	0.696
4 Core Area/Duct Area	0.806	0.800	0.790	0.744	0.696
5 Supply Volume (c.f.m.)	677	711	729	723	696
6 Room Temperature, degrees F.	81	80	81	80.5	81.5
7 Supply Temperature Diff., degrees F.	-20.5	-20	-21	-21	-20
8 Maximum Peak Velocity†, f.p.m.	185	180	180	225	230
9 and Location, feet	25	30	30	25	25
10 Average Velocity Same Location†, f.p.m.	125	75	100	140	100
11 Maximum Velocity on CL (Kata), f.p.m.	70	70	55	150	120
12 Location, feet	28	30	30	23	21
13 Temperature Diff., degrees F.	-0.7	-1.5	-1.3	-3.0	-1.3
14 Velocity at (1) (Kata), f.p.m.	28	24	20	34	15
15 Temperature Diff., degrees F.	0	+1.0	-0.5	+0.5	-0.5
16 Velocity at (2) (Kata), f.p.m.	20	20	10	36	25
17 Temperature Diff., degrees F.	0	+1.0	-0.5	+0.5	-0.7
18 Velocity at Rear Wall (Kata), f.p.m.	120 dn.	120 dn.	55 dn.	50 tur.	55 tur.
19 Temperature Diff., degrees F.	-2.1	-1.6	-1.2	-1.8	-1.0
20 Distance from Grille, feet	40+	40+	37*	40*	40*
21 Distance from Grille, feet	40+	40+	35	34	28
Primary Jet Drops to 150 f.p.m.					

Note: Items 8 through 19 are for 5-ft. conditions.

*Actual stream diffuses before reaching floor. Distance given is where lower stream edge extended would strike.

†Data with deflecting vane type velocity meter.

Air Conditioning

Where Air-Conditioning Systems Were Installed in Boston During 1937

(Compiled by Boston Edison Co.)

Name and Address	Make of Equipment	Hp.	Date Installed
Banks			
Newton Trust Co., 1156 Walnut St., Newton	General Electric	3½	1937
State Street Trust Co., State St.	Air Controls Co.	4	1937
Hospital			
N.E. Baptist Hos., 25 Bennett St., Roxbury	Frigidaire	80	1937
Hotels			
Copley Plaza Hotel, 138 St. James Ave.	Frigidaire	51	1937
Manger Hotel, North Station	York	5½	1937
Hotel Vendome, Comm. Ave. & Exeter St.	Westinghouse	1½	1937
Offices			
American Express Co., 378 Boylston St.	Carrier	9	1937
Bond & Goodwin, 30 Federal St.	Frigidaire	13	1937
Dr. C. W. King, 597 Washington St.	Frigidaire	3½	1937
General Heat & App. Co., 596 Commonwealth	Frigidaire	18	1937
Hird & Connor, 88 Broad St.	Carrier	¾	1937
Industrial Appliance Co., 110 Arlington	Industrial Appliance	4½	1937
Lloyd Mansfield Co., 47 Winter St.	Frigidaire	3¼	1937
Dr. C. H. Osbourne, 376 Newton St.	General Electric	3	1937
Chestnut Hill	S.A.C.	2½	1937
Standard Air Cond. Co., 126 High St.	Frigidaire	1	1937
Standard Theater App. Co., 71 Broadway	Airtemp	3½	1937
Young Oil Co., 969 Commonwealth Ave.			
Office Bldg.			
Liberty Mutual Ins. Co., Park Sq.	Carrier	125	1937
Restaurants			
Abner Wheeler House, Worcester Turnpike	York	3½	1937
The Den, 6A Hudson St.	Westinghouse	9½	1937
Duford's Restaurant, 15 Avon St.	Airtemp	6	1937
Gamsun Restaurant Co., 19A Hudson St.	York	12	1937
Handy Grill, Tremont St.	Frigidaire	12	1937
Gundlach's Hofbrau, 43 Stanhope St.	Westinghouse	26½	1937
Gundlach's Hofbrau, 43 Stanhope St.	Westinghouse	2¼	1937
Hayes-Bickford, Boylston St., Brookline	York	12	1937
Hayes-Bickford, Brighton Ave.	York	6	1937
H. P. Hood, 109 Federal St.	York	20	1937
Hunt's Lunch, Inc., 1916 Beacon, Brookline	York	6¾	1937
Huyler's Restaurant, 14 Milk St.	Westinghouse	21½	1937
Howard Johnson's, 620 Huntington Ave.	Frigidaire	18	1937
Mayflower Doughnut Shop, 172 Tremont St.	General Electric	11	1937
The Paddock, 255 Tremont St.	Trask Eng. Co.	12	1937
Schrafft's, 81 Milk St.	Auto. Refrig. Co.	16¼	1937
Thompson's Spa, 239 Washington St.	York	10	1937
Thompson's Spa, 44 Temple Place	York	8½	1937
Viking Restaurant, 442 Stuart St.	Frigidaire	7½	1937
Walton Lunch, Pemberton Sq.	Auto. Refrig. Co.	12	1937
Waldorf Restaurant, Scollay Sq.	Auto. Refrig. Co.	22	1937
Waldorf Restaurant, 637 Atlantic Ave.	Auto. Refrig. Co.	23	1937
Stores			
Candyland Conf. Co., 475 Moody, Waltham	York	7½	1937
Fanny Farmer, 131 Mass. Ave.	Westinghouse	2	1937
Howard Clothing Co., 41 Tremont St.	York	12	1937
Lerner's, 463 Washington St.	Buensod-Stacy	51½	1937
Grayson Shops, Winter St.	York	25	1937
Touraine Glove Co., West & Tremont Sts.	Westinghouse	½	1937
Fredley's, 250 Boylston St.	Frigidaire	20	1937
Coleman's, Tremont St.	Frigidaire	46	1937
Yamanaka & Co., 424 Boylston St.	Frigidaire	7½	1937
Lamson & Hubbard, 304 Boylston St.	York	25	1937
Sallinger's, 501 Washington St.	York	18	1937
Theodore, Inc., 47 Newbury St.	Airtemp	12	1937
Touraine Glove Co., 147 Tremont St.	Westinghouse	5	1937
Garb Drug Co., 1217 Central St., Newton	Air Controls Co.	6	1937
Liggett's, 452 Boylston St.	Frigidaire	17	1937
Lampell's, 162 Tremont St.	Westinghouse	10½	1937
Regal Shoe Store, 322 Washington St.	Airtemp	3¼	1937
Spencer Shoe Store, Summer St.	Frigidaire	6	1937
Thom McAn, 345 Washington St.	York	3½	1937
Thom McAn, 244 Elm St., Somerville	York	5½	1937
Thom McAn, 608 Washington St.	Frigidaire	6	1937
Thom McAn, Moody St., Waltham	General Electric	9	1937
Carroll Perfumer, 171 Tremont St.	Airtemp	3½	1937
Theaters			
Brookline Village Theater, Brookline	York	78	1937
Winchester Theater, Main St., Winchester		31¼	1937
Miscellaneous			
Boston & Albany R.R., Mechanics Bldg.		150	1937
Noyes Buick Co., 857 Commonwealth Ave.	Frigidaire	55	1937
Rose Beauty Salon, 27 Corinth, Roslindale	Air Controls Co.	8½	1937
144 Room Coolers		¾ each—108	1937
Residences			
Gilbert Cox, Eaton Rd., Needham		3	1937
T. R. Kimball, 840 Brush Hill Rd., Milton	General Electric	6	1937
Joseph Marksville, 5 Montrose St., Newton	Frigidaire	5	1937
J. A. Munroe, 50 Dudley Rd., Newton	General Electric	2	1937
Sam Schwartz, 354 Moody St., Waltham		1	1937
20 Residential Installations	Carrier	Total 15	1937

(Continued on Page 20, Column 1)

Nearly a Dozen Factors Must Be Considered In Selecting Proper Type of Air Outlet

(Concluded from Page 18, Column 5)

"As one would also expect, the greater the difference in temperature between that of the room and the entering air, the more tendency there is for the entering air to fall into the occupancy zone.

"Effect of the velocity of the entering air is not so simple and is, in fact, very complicated with certain types of grilles. For an open hole, an increase in air velocity will cause the point at which the cool air first drops into the occupancy zone to move toward the rear wall, but may increase the velocity of this objectionable current without appreciably reducing its temperature. The increased entering velocity may raise the velocity down the rear wall to an excessive figure.

"Effect of velocity upon the flow characteristics from any particular grille can only be determined by a rather elaborate test procedure simulating the conditions of actual use.

"Size of the grille is a factor, but, as it is fixed by the volume of air required and the velocity, it does not need to be discussed or considered separately.

Items 20 and 21 of Table 1 showing velocities taken with the deflecting vane type meter indicate the length of throw of the various air streams, explained the speaker.

With the open hole, little or no effect is shown on the throw with change in aspect ratio.

With the grilles, some tendency to a shortened throw with high aspect ratio is indicated, although this is somewhat obscured by the influence of diffusion.

In the open hole test, the stream hit the floor at distances of from 23 to 28 feet from the supply outlet. When the grilles were in place, because of diffusion, the stream could hardly be said to hit the floor at all, but a continuation of the lower edge of it for the three higher aspect ratios would strike the floor between 37 feet and the end of the room.

The location where the air stream is reduced to an average velocity of 150 f.p.m., as indicated by a deflecting vane type meter, is shown in item 21 of the tables. For the open hole tests, no influence is indicated of the effect of the aspect ratio.

The air stream reaches the rear wall with this velocity in the tests of the low aspect ratio grilles. In the grille with the highest aspect ratio the velocity was reached at 28 feet out.

Average distance measured horizontally for the reduction of the air stream velocity to 150 f.p.m. was 25 feet for the open hole tests and 36 feet for the grille tests.

In explaining the factors affecting air distribution, Mr. Stewart stated:

"A list of some of the principal variables other than throw (usually the length of the room) follows:

"(1) Height of room; (2) mounting height of grille; (3) volume of air; (4) temperature of air; (5) velocity of air; (6) aspect ratio; (7) side walls; (8) location of outlet; (9) beams.

"Aspect ratio is the width divided by the height of the actual opening inside the supporting frame. It is a factor in distribution, but except when quite large is not as important a factor as appears to be the general opinion.

"Nevertheless, a high aspect ratio

does decrease the throw. If the grille is mounted near the ceiling, the high aspect ratio will increase the rate at which the cool air mixes with the room air, and therefore decrease its tendency to fall.

"If the grille is mounted at a considerable distance below the ceiling (for example, 2 or 3 feet) and is of the upward deflecting type, the effect just referred to will be overcome in many instances by the effect of the high aspect ratio in preventing the air stream from being carried high enough to slide along the ceiling.

"The practical problem of selecting a suitable grille is often greatly complicated by the width of the room and the necessity of locating the outlets at particular places.

"For example, a wide room requires either a grille with which the

air can be forced to diverge widely from the face of the grille, or a number of outlets must be used.

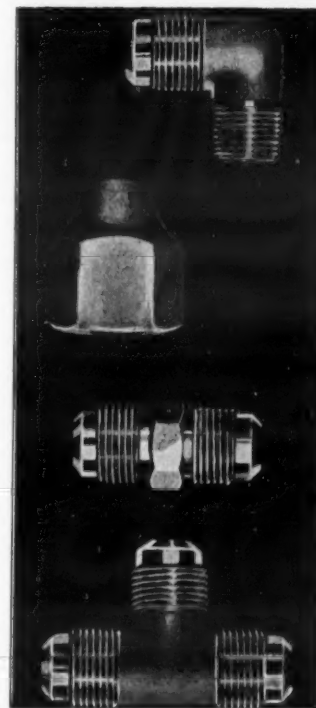
"Grilles which have a wide divergence are not suitable for very long throws, and this fact must be kept in mind by the designer. Narrow rooms necessitate the use of a grille which will not give a wide divergence and, generally speaking, such a grille will produce a relatively long throw.

"A widely divergent grille in a narrow room may result in high velocity down the side wall with consequent discomfort to the occupants near the wall.

"For architectural reasons it is often necessary to locate the outlet at or near a corner, and for this purpose some sort of outlet must be used which will direct the air away from the adjacent wall.

"If beams are at right angles to the only direction from which it is possible to discharge the air, the designer must be sure that the entering air does not strike against the beam, for it will be deflected down into the occupancy zone."

THE BUYER'S GUIDE



Seepage-Proof FITTINGS

"Built Right to Stay Tight"

Every style and size of forged flared tube fitting for the refrigeration industry is available from standard stock at Commonwealth.

Thousands of semi-standard patterns enable us to quickly furnish any desired variation in pipe and tube ends.

Special fittings made to order.

Commonwealth fittings are correctly designed, carefully machined, and tube seats are protected in shipping.

25 years of service to the industry.

COMMONWEALTH BRASS CORPORATION

Commonwealth at Grand Trunk R. R.
DETROIT, MICH.

MILLS COMPRESSORS

for Commercial Use

Mills Novelty Company • 4100 Fullerton Avenue • Chicago, Illinois

CHIEFTAIN

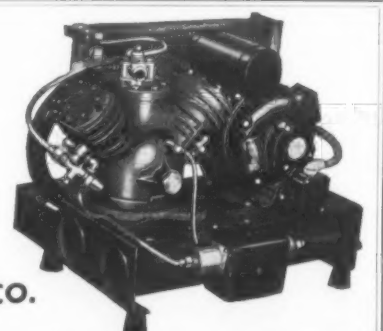
QUALITY-BUILT COMPRESSORS and CONDENSING UNITS

The CHIEFTAIN line represents precision manufacture and proven service, and is designed for all domestic and light commercial applications.

Sizes range ½ to ¾ HP.

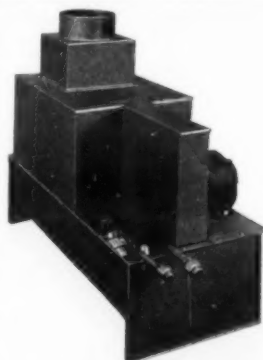
Write for prices.

TECUMSEH PRODUCTS CO.
TECUMSEH, MICH.



THE PEERLESS WATER SAVER (EVAPORATIVE CONDENSER)

SAVES 95% on WATER COSTS FOR CONDENSING PURPOSES



PEERLESS WATER SAVER (Evaporative Condenser) MODEL PWS 3

Yes! The Peerless Water Saver will cut condensing water costs as much as 95%—and that's why your customers will buy it.

You can show your prospects actual dollars and cents savings in black and white, not only in operating expense but in initial cost too, when you sell the

Peerless Water Saver.

This unit offers you the greatest sales opportunity in a decade. Be sure you take advantage of it!

Write to Dept. F-2, Peerless of America, Inc., 515 West 35th Street, Chicago, Ill., for descriptive folders.

PEERLESS of AMERICA, Inc.

ESTABLISHED IN 1912 AS THE PEERLESS ICE MACHINE CO.
New York Factory Main Factory—General Offices Pacific Coast Factory
43-20 34th Street 515 West 35th Street 3000 S. Main Street
Long Island City Chicago Los Angeles
PEERLESS JOBBERS IN ALL PRINCIPAL CITIES

BUY PEERLESS FOR PERFORMANCE

Where Air Conditioning Was Installed in Boston (Cont.)

Industrial

Cedric Chase, 153 Moody St., Waltham....	Delco-Frigidaire	10	1937
H. M. Robinson, 541 Tremont St.....	York	6	1937
Warren Clock Co., Ashland.....	General Electric	25	1937
Watertown Arsenal, Arsenal St., Watertown	Delco-Frigidaire	3 1/4	1937
J. H. Winn Sons Co., Washington St.,			
Winchester.....	Delco-Frigidaire	3	1937
Unclassified.....		250	1937

THE BUYER'S GUIDE



ANOTHER HELP FOR Sherer Dealers AND DISTRIBUTORS

"Profit-Making Meat Displays"—a new 32-page booklet tells meat merchants how to get greater profits from their displays.

The Sherer Franchise assures you of complete cooperation from the factory. Write for details about the Sherer Case and Cooler Franchise. Valuable territories still available.

SHERER-GILLETTE CO. MARSHALL, MICHIGAN
Display and Storage Equipment for Retail Food Stores

DISTRIBUTORS
WANTED!

Write for details of Profit-making franchise. Complete PERCIVAL line meets every requirement of the modern food store.

Modern styling . . . Beautiful design . . . Outstanding construction . . . Economical operation! TOMORROW'S case, presented TODAY! Get the jump on other distributors by selling this modern marvel of electrical refrigeration. Its NEW style and NEW features give you exclusive selling advantages! NEW PERCIVAL FINANCE PLAN HELPS YOU SELL.

C. L. PERCIVAL COMPANY
DES MOINES IOWA
51 YEARS OF SERVICE 1886-1937

New A.P. 44

Air Conditioned Model

**OWN YOUR
OWN BUSINESS
IN
1938**



**THRU' THE
H. & H.
"38"
PLAN**

Are You a REAL Commercial Refrigeration or Fixture Salesman? The H. & H. '38 Direct Dealer Plan Will Put You in Your Own Business. MAKE LARGE DEALER PROFITS, (not small commissions)

Our '38 Plan Offers:

1. Direct factory-to-dealer exclusive franchise—floor models—sales kits—descriptive literature THAT SELLS.
2. Complete line—Dulux and porcelain display cases, streamlined and conventional models—market coolers—grocery boxes. Over 50 different models and sizes—make regular dealer profits.
3. Free—forceful mail advertising—DIRECT TO EVERY PROSPECT IN YOUR TERRITORY.
4. To finance the H. & H. products and any nationally known compressor of your selection, both on the same contract with regular down payment and terms.
5. We discount your contracts—converting them into dollars—IMMEDIATE PROFITS TO YOU.

Valuable Territories Now Available—ACT NOW!

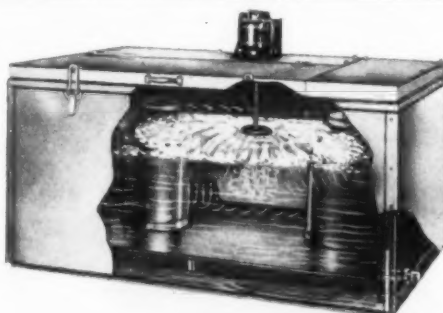
WRITE, WIRE COLLECT giving us all information: experience, sales ability and territory YOU NOW COVER.

HOLCOMB & HOKE MFG. CO.
1445 E. Van Buren St. Indianapolis, Indiana

Fast, Efficient, Simple and Moderately Priced WILSON COLD-WHIRL Milk Cooling Cabinet

Sprays "icy-cold" water around necks of cans, assuring rapid cooling of the milk in cans above water level. The Cold-Whirl provides a simple, trouble-free circulating system that is exceptionally economical to operate. No centrifugal pump to wear or become noisy; no complicated pipe spray system to clog.

Cabinet construction embodies the many superior features of other Wilson Cabinets.



Write for dealer proposition and particulars regarding the complete Wilson line . . . ZERO-FLOW, COLD-WHIRL, VERTICAL, WALK-IN, "Dry Storage."

WILSON CABINET CORPORATION, Smyrna, Del.

Sewell Is President Of Boston Bureau

BOSTON—Henry H. Sewell, vice president and general manager of Cooling & Air Conditioning Corp., division of B. F. Sturtevant Co., manufacturer of air-conditioning equipment, was elected president of the Air Conditioning Bureau of Boston at its annual dinner held recently at the Chamber of Commerce.

Mr. Sewell succeeds Julius Daniels, sales manager of Boston Edison Co., who served as president of the bureau for four years.

Other officers chosen at the dinner meeting were: vice president, Rudolph Sommers, vice president of Boston Ice Co.; treasurer, E. D. Johnson, New England representative, Buffalo Forge Co.; secretary, Daniel Ricker, head of Boston Edison's air-conditioning division; directors, Louis Gardner, General Heat & Appliance Co., and S. T. Smith, manager of Gar-Wood, Inc.

New Stoker Timer Relay Introduced by Penn

GOSHEN, Ind.—A new stoker timer relay, rated to handle stokers up to and including 1 hp., has just been announced by Penn Electric Switch Co.

Designated as the type 560, the new unit is smaller and more compact than the former Penn Stoker timer relays available. Panel carrying the synchronous self-starting timer, the timer operated cam, the relay and the terminals, as well as the new special type air cooler transformer, are all housed inside the case, without projecting parts.

Timer motor is the same as that used on former stoker timer relays put out by the company. It is a 24 V. motor. Timer cams operate contacts in the 24 V. pilot circuit of the new relay.

Relay is a single pole, double break relay, of a design and produce from materials that are said to give it a greater pull in the holding power than in any previous Penn relay.

The timer is available for 30-minute or one-hour firing intervals, when supplied with a one-hour timer motor, and for two and four-hour intervals when supplied with a four-hour motor. Cam units are supplied for one firing frequency per shaft rotation, and for two frequencies.

New York and Baltimore Dealers Named by Utica

UTICA, N. Y.—Appointment of two dealers and a distributor in the New York City and Baltimore territories for Utica washed air conditioners has been announced by Carl Sawade, general sales manager of Utica Radiator Corp.

Macmann Engineering Co., Stamford, Conn., and Hart Air Conditioning Co. of New Jersey, with showrooms in Union City and Maplewood, are the new Utica conditioner dealers. Both firms have installed demonstration units in their showrooms. Macmann's first residential job has gone into the home of James A. K. Marshall, Greenwich, Conn.

New distributor in the Baltimore territory is Wallace Stebbins & Sons, H. W. Kingsbury, president of the company, has organized an air-conditioning department in charge of P. M. Lockwood, to specialize in Utica units sales and installation. A demonstrating unit has been installed in the company's showrooms.

Detailed Tabulation of Air-Conditioning Installations

Published in last week's issue of AIR CONDITIONING & REFRIGERATION NEWS were summaries of installations of air-conditioning systems made in major population centers of the U. S., classified by the various types of establishments in which the installations were made.

The surveys were obtained through the cooperation of the operating power companies serving the various areas.

Some of the power companies have gone even further in keeping records of air-conditioning installations by tabulating such complete data as the name and address of the residence or business establishment where the system was installed, the make of the equipment and/or the name of the firm doing the job, and the size of the system.

This is the type of survey information which is being presented in this issue. Similar data for other cities in which such information is obtainable will be presented in forthcoming issues.

Where Air-Conditioning Systems Were Installed in Omaha During 1937

(Compiled by Nebraska Power Co.)

Name and Address	Make of Equipment	Hp.
Beauty School		
Capitol Beauty School, 1918 Farnum.....	Frigidaire	34.5

Clubs, Recreation Rooms, Etc.

Caesar's Country Club, 1403 S. 75th.....	Lipman	22.66
Colony Club, 1912 Farnam.....	Metro Utilities	...
Model Billiard Parlor, 1322 Douglas.....	Lipman	6.0
Omaha Athletic Club, 17th & Douglas....	Frigidaire	70.0
Omaha Club, 2002 Douglas.....	Fairbanks-Morse	5.75
Palace Billiards, 1318 Douglas.....	Frigidaire	11.33
Piampore Billiards, 1818 Farnam.....	General Electric	22.66
State Recreation Parlor, 1412 Farnam....	Brunner	5.5
Venetian Club, 2553 Farnam.....	Frigidaire	9.0

Funeral Homes

Brewer-Korisko Mortuary, 4609 S. 24th....	Baker-Trane	13.0
Hoffman Mortuary, 24th & Dodge.....	Carrier	18.0
Kunold Mortuary, 4423 S. 24th.....	York	9.33

Hospital

Clarkson Hospital, 26th & Dewey.....	Frigidaire	6.0
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Hotels

Blackstone Hotel, 36th & Farnam.....	Frigidaire	28.0
Fontenelle Hotel, 18th & Douglas.....	Baker-Trane	260.0
Hill Hotel, 16th & Howard.....	Frigidaire	33.0
Rome Hotel, 16th & Jones.....	Frigidaire	48.0

Industrial Applications

Farmcrest Dairy, 720 S. 24th.....	Airtemp	3.33
Gland-O-Lac, 19th & Leavenworth.....	Brunner	20.0
Inland Construction Co., 3867 Leavenworth	Airtemp	9.0
Maney Milling Co., 27th Ave. & Arbor....	Baker-Trane	8.50
Stover's Candy, 302 S. 16th.....	Baker-Trane	3.5

Offices

Bell-Trimble, 635 Grain Exchange.....	General Electric	1.0
Braun, Ray & Finley Co., 527 Grain Exce..	Airtemp	3.33
Commercial Savings & Loan, 4820 S. 24th..	Baker-Trane	8.50
Crofoot-Fraser-Connally & Stryker,		
637 Omaha Nat'l Bank Bldg.....	Baker-Trane	8.5
Fell & Pinkerton Co., 635 Keeline Bldg....	Airtemp	3.33
First Mtge. Acceptance Corp., 1905 Harney.	Airtemp	3.33
Goldstein Chapman, 16th & Farnam.....	Airtemp	3.33
D. Fay Hosman, 1819 Farnam.....	Westinghouse	18.0
Sam House, 514 S. 16th.....	Frigidaire	11.33
Pete Loch, Redick Tower.....	Frigidaire	6.5
Metropolitan Utilities Dist., 18th & Harney	*Western Air	30.0
Midwest Adjustment Co., 1221 Farnam....	Frigidaire	3.0
Nebraska Power Co., 2314 "M".....	Baker-Trane	10.5
Natkin & Co., 1726 St. Mary's.....	Westinghouse	2.75
Northrup-Jones, 1617 Farnam.....	York	34.66
Omaha Hardwood Lumber Co., 1144 N. 11th	Airtemp	3.33
Omaha Insurance Co., 250 Omaha Nat'l Bk.	Airtemp	6.66
Paramount Pictures, Inc., 1704 Davenport.	Westinghouse	11.0
Paxton-Mitchell Co., 2614 Martha.....	Baker-Trane	3.5
R.K.O. Pictures, Inc., 1508 Davenport....	Carrier	9.5
John Redick, 638 Grain Exchange.....	Airtemp	3.33
Standard Furnace & Supply, 407 S. 10th..	Kelvinator	3.0
University of Nebraska, 42nd & Dewey....	Frigidaire	1.0
Winthrop-Mitchell, Farnam Bldg.....	Carrier	0.75
Sam Ziegman, 2218 Fort.....	Frigidaire	1.0

Residences

Walter Beebe, 1728 S. 32nd.....	Carrier	4.0
N. C. Blackburn, 117 S. 50th Ave.....	Frigidaire	8.5
G. L. DeLacy, 138 N. 66th.....	General Electric	4.0
H. M. Doorly, Fairacres.....	General Electric	5.33
Dr. A. D. Cloyd, 5104 Cumming.....	General Electric	1.75
A. H. Erickson, 680 N. 56th.....	General Electric	5.33
R. D. Goldberg, 104 N. 48th.....	Westinghouse	3.0
W. M. Green, 5116 Parker.....	Frick	5.50
M. P. Hinchey, 2948 N. 47th Ave.....	Fairbanks-Morse	3.33
F. R. Hoagland, 5109 Cass.....	Carrier	1.50
G. M. Houser, 2302 Country Club Blvd....	Airtemp	3.33
W. M. Jeffers, 3030 S. 56th.....	Kelvinator	5.33
Mrs. W. A. C. Johnson, 208 S. 33rd.....	Frigidaire	1.0
Kelvin Home, 2047 N. 54th.....	Kelvinator	0.75
Milton Livingston, 303 N. 54th.....	Frigidaire	3.33
L. R. Louis, 3038 Martin.....	Airtemp	0.66
J. W. Madden, 123 S. Elmwood.....	General Electric	1.33
Dr. R. A. Penny, 4614 N. 30th.....	Frigidaire	3.66
A. C. Potter, 407 N. Elmwood.....	Baker-Trane	3.0
G. Rasmussen, 116 S. 50th Ave.....	Frigidaire	0.75
Voyle D. Rector, 671 N. 56th.....	Baker-Trane	6.0

(Continued on Page 22, Column 4)

Engineering

Tests Show Metals Most Suitable for Sub-Zero Service

NEW YORK CITY—Results of tests demonstrating what metals and alloys are most resistant to the marked tendency of sub-zero temperatures to induce brittleness in metals were outlined by V. T. Malcolm of the Chapman Valve Co. at the opening session of the A.S.R.E. convention here last week.

Notched-bar impact tests were found to be the best test of what metals are most resistant to low temperatures, Mr. Malcolm stated. In these tests the steel bars are left in sub-zero temperatures for an hour, and are then taken out and struck sharply.

Reduced toughness of metals is the most important factor that must be met under low temperature conditions, said Mr. Malcolm.

Low alloy steels when normalized are suitable for low temperature conditions when combined with other alloys. The copper chromium types are the best.

Carbon steels lose impact resistance and become brittle under low temperature conditions, declared the speaker. Nickel will effect a marked betterment up to 3½%. Nickel steels are the best cheap materials for use under extreme low temperature conditions.

Nickel, silicate, and copper alloys are also suitable for use where sub-zero conditions are met. In all cases, however, the metals must be treated correctly and made clean, for defects or lowered resistance arising from imperfect treatment or impurities will be magnified by low temperatures, Mr. Malcolm stated.

Overheated steels and steels with large grain structure have low impact values, said the speaker.

In answer to a question from the floor, Mr. Malcolm said that lead-copper and copper-tin alloys do not embrittle at low temperatures. He said no experiments had been made with solders, but declared that experiments indicated that they wouldn't be affected.

Conditioning Equipment To be Displayed At Tool Show

DETROIT—National Machine and Tool Progress Show, sponsored by the American Society of Tool Engineers in connection with its first annual convention, will open March 9 in Convention Hall here.

Included in the exhibits of industrial equipment will be displays of air-conditioning equipment, plastics and plastic production equipment, furnaces, pyrometers, and automatic heating-equipment controls.

James R. Weaver, chairman of the Pittsburgh section of the association, and director of equipment for Westinghouse Electric & Mfg. Co., is in charge of the program for the convention.

Limbach Joins Riverside Co. In Sales Engineering Post

KALAMAZOO, Mich.—Henry C. Limbach, formerly with Frederickson Co., Saginaw, Mich., has joined Riverside Foundry & Galvanizing Co. as director of sales and engineering for the company's non-ferrous division, reports Palmer B. Coombs, general manager.

Under Mr. Limbach's direction, the company has developed a scientific process of making high lead bearing bronzes of high quality and uniformity, Mr. Coombs says, which are now being introduced to the trade in addition to Riverside's regular line of brass, bronze, and aluminum castings.

Explaining Riverside's position in the industry, Mr. Limbach has prepared a paper, called "This is Our Story."

New Plastics Molding Plant Opened by G-E At Pittsfield, Mass.

PITTSFIELD, Mass.—The plastics department of General Electric Co. has recently opened a new molding plant here which is entirely devoted to the research, development, design, and manufacture of molded plastics products. Representing an investment of approximately \$1,000,000, the new plant is the scene of most of the company's plastic activities.

Manufacture of plastic parts by G-E started more than 40 years ago; recent activities of the company have been such that the business has trebled with the last five years.

Plastic headquarters as set up in Pittsfield include at present about 900 employees, with additional plants at Lynn, Mass., Meriden, Conn., and Fort Wayne, Ind., bringing the total number of G-E people engaged in plastics work to more than 1,600.

The new molding plant is set up to offer maximum service to customers, with emphasis on efficiency and speed of operation.

In the plastics manufacturing industry, it is the custom of the molder to hold and store molds after initial production, for the customer's subsequent use. At present the vault at the Pittsfield plant contains some 6,000 molds with a value of about \$2,000,000; 2,700 additional molds are stored in the Meriden and Fort Wayne plants.

At present 324 presses are set up in the new Pittsfield plant, largest number operated by any single molder in the industry. Approximately 300 additional presses are operated at Meriden and Fort Wayne. Equipment at the new plant is said to be so flexible that molding pressures varying from 7½ to 1,500 tons are possible with the group of machines.

Tool room, where precision molds are produced, has been expanded and modernized with addition of high-speed equipment. Molding department itself has several new high-speed presses, a G-E development, and designed to provide faster and more dependable production.

A feature of the molding plant is the new Supertherm system which provides heat through hot water under high pressure. Hot water is supplied at a pressure of 190 lbs. per sq. in. at a temperature of 370° F., from two large oil-fired boilers.

A staff of 36 engineers is employed at headquarters here on research, development, and manufacturing problems. These include chemists, chemical engineers, mechanical engineers, electrical engineers, designers, and metallurgists.

The research laboratory probes into the organic chemistry of resins; the development laboratory develops resins, varnishes, and compounds to a point where they can be used in production; while the engineers in the control laboratory supervise the quality of the compounds and materials at various stages of manufacture, as well as the quality of the finished product.

The Textolite laminated development laboratory at the Lynn plant does similar development work for the materials used in laminated plastics products which are produced there. A similar laboratory also functions at Meriden on cold-molded compounds and materials.

Chandonnet New Asst. Mgr. Of Elmira Foundry Co.

SCHENECTADY—A. T. Chandonnet, secretary of the manufacturing committee of General Electric Co., has been appointed assistant manager of Elmira Foundry Co., Inc., Elmira, N. Y., a G-E affiliate, according to an announcement by W. R. Burroughs, G-E vice president in charge of manufacturing.

Giles S. Maxwell, supervisor of costs, succeeds Mr. Chandonnet as committee secretary, and Thomas D. Foy, on special assignments in the manufacturing organization, succeeds Mr. Maxwell as costs supervisor. Appointments were effective Jan. 1.

Swart Gives New Method of Figuring Fin Coil Surfaces

NEW YORK CITY—Design calculations for extended surface cooling units with an aim towards a simpler method of solving many finned coil problems were presented in a paper prepared and delivered by R. H. Swart, General Refrigeration Co., at the A.S.R.E. meeting last week.

Reviewing the laborious tests and careful consideration of design calculations necessary with previous methods of determining the proper surface, Mr. Swart pointed out that the criterion of extended surface design is the B.T.U. per dollar.

Therefore, continued Mr. Swart, if the operating conditions are known, it is desirable to find the most economical combination of fin thickness and material, tube, size, and centers and other variables. It is also advantageous to find the efficiency limits of a given design as affected by air velocity, or variations in external or internal heat transfer film coefficients.

The information necessary for the analysis, stated Mr. Swart, is as follows: air film coefficient, heat transfer coefficient air to metal in B.T.U. per hour, per mean temperature difference, per unit surface; refrigerant film coefficients, metal to evaporating or circulating fluid in B.T.U. per hour per square foot of metal surface per degree F. temperature difference; heat conductivity of fin and tube metal.

CLASSIFIED ADVERTISING

RATES: Fifty words or less in 6-point light-face type only, one insertion, \$2.00, additional words four cents each. Three insertions \$5.00, additional words ten cents each.

PAYMENT in advance is required for advertising in this column.

REPLIES to advertisements with Box No. should be addressed to Air Conditioning and Refrigeration News, 5229 Cass Ave., Detroit, Mich.

POSITIONS WANTED

R.A.C.I. GRADUATE desires connection with reliable manufacturer, distributor, or dealer as refrigerator service man. A year's experience, can give reference. Young, willing worker, healthy, American. Box 1017, Air Conditioning & Refrigeration News.

FRANCHISES AVAILABLE

COMPLETE LINE of refrigerator display cases, walk-in coolers, and refrigerators for meat markets, grocers, restaurants, etc. Sell with Ehrlich line of compressors, or with any other line of machines. Attractive discounts, also liberal financing arrangements to help sell. 69 years in business. Write for full information and catalog. H. EHRlich & SONS MFG. CO., Refrigerator Builders, St. Joseph, Mo.

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PATENTS

HAVE YOUR patent work done by a specialist. I have had more than 25 years' experience in refrigeration engineering. Prompt searches and reports. Reasonable fees. H. R. VAN DEVENTER (ASRE), Patent Attorney, 342 Madison Avenue, New York City.

McCarty Heads Westinghouse Small Motors Division

EAST PITTSBURGH—R. A. McCarty has been appointed manager of the small motor division of Westinghouse Electric & Mfg. Co. to succeed R. F. Frenger, who has been transferred to the vice president's staff here for other special duties, announces Westinghouse Vice President Ralph Kelly.

Mr. McCarty became associated with Westinghouse as a student engineer in 1903, following his graduation in electrical engineering from University of Tennessee.

F. H. Stohr succeeds Mr. McCarty as manager of the generator division, with headquarters here. Formerly manager of generator sales, Mr. Stohr joined the company in 1922, and has held various positions in connection with the negotiation work on power apparatus.

Mr. McCarty's headquarters will be in Lima, Ohio.

Skinner Is Managing Engineer Of G-E Appliance Section

BRIDGEPORT, Conn.—David W. Skinner, former assistant manager of manufacturing at General Electric Co.'s plant here, has been named managing engineer of G-E's appliance section by W. Stewart Clark, manager of the company's Bridgeport works. In his new capacity Mr. Skinner is responsible for all engineering and manufacturing of the appliance section.

Mr. Skinner was graduated from Massachusetts Institute of Technology in 1923, and served there as a laboratory assistant during the following year.

In 1925 he started work in G-E's West Lynn, Mass., works, where he became manufacturing superintendent of the meter department in 1930. In 1935 he was assigned the control of waste and spoilage losses in the manufacturing general department of the company's Schenectady works. He came to Bridgeport a year later.

THE BUYER'S GUIDE

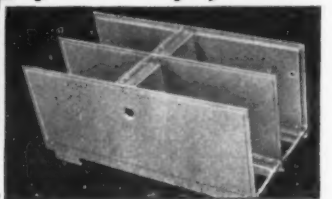
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Modernize old equipment . . . provide much greater storage space for packaged goods . . . eliminate brine leaks and attendant odors . . . reduce weight and simplify installation . . . require a minimum of service . . . provide ideal temperatures under all conditions . . . cost less to operate . . . quickly and easily installed in any standard cabinet at small cost.

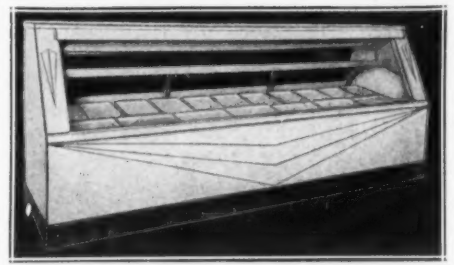
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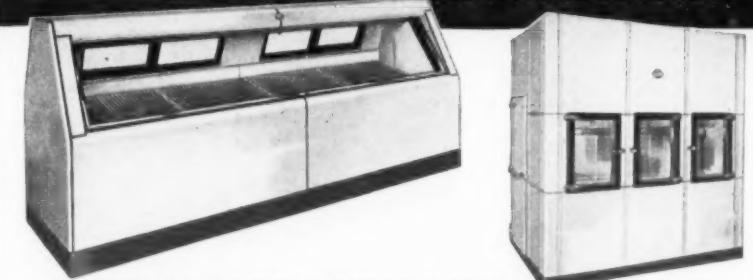


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1938 LINE OF COMPLETE FOOD MARKET EQUIPMENT: Display Cases, Walk-in Coolers, Vegetable Display Cases, Reach-in Boxes for Restaurants, Hotels, and Bakers. • Streamlined Beauty • World's Highest Quality • Genuine Porcelain Interior and Exterior—(No Imitation Finishes Used) • Assured Lifetime Vision • Competitively Priced • Liberal Dealer's Discount • Financing Plan for Dealers • Over 40 Years of Experience • WRITE IMMEDIATELY FOR FULL DETAILS • FOGEL REFRIGERATOR CO. 16th & Vine Sts., Philadelphia, Pa.

TYLER WELDED STEEL REFRIGERATORS



A COMPLETE NEW LINE FOR 1938

Fastest selling line ever offered to the trade. Completely covers the field. Pace-setting values in Top Display and Double Duty Cases—6, 8, 10 and 12 foot lengths... Two shelf cases... Delicatessen cases... Reach-In Boxes... Walk-In Coolers. All streamlined with striking modern beauty and engineered with latest improvements.

With this new Tyler line of commercial refrigerators you can step out ahead of all competition. Write today for free literature and attractive dealer proposition.

TYLER FIXTURE CORP. Dept. R, NILES, MICH. NEW YORK OFFICE, 601 W. 28th St. CHICAGO OFFICE, 1063 W. Ogden Ave.

PELCO Buyers ARE YOUR SALESMEN



Operators of taverns, restaurants, roadhouses, resorts, hotels—wherever bottled beverages and food are sold—become YOUR salesmen the minute they buy a PELCO.

The DOUBLE UTILITY feature (the beverage cooling compartment where FLOATING ICE is made AUTOMATICALLY, as needed, plus the efficient dry-cold compartment), the revolutionary performance, the rich appearance make fast friends for PELCO.

GET the facts on PELCO now . . . Address Desk A-28

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PORTABLE ELEVATOR MFG. CO.

Sold in Canada by UNIVERSAL COOLER CO. OF CANADA, LTD., BRANTFORD, ONTARIO BLOOMINGTON ILLINOIS, U.S.A.



Callahan Vice President Of International G-E

NEW YORK CITY—Edward F. Callahan, general manager of apparatus sales of International General Electric Co., has been elected vice president of the company, according to Clark H. Minor, president.

Mr. Callahan, who has been connected with General Electric Co. and I. G. E. for 33 years, entered G-E's test course at Schenectady in 1905, after having been graduated from Yale university with a Ph.B. in electrical engineering.

In 1911 he joined G-E's foreign department, and seven years later was made assistant to E. A. Baldwin, manager of International General Electric Co.'s department of Europe. In 1922 he became sales manager of I. G. E.'s department of Americas.

Nash Export Division Moved to Detroit

DETROIT—Export sales department of the Nash Motors division of Kelvinator Corp. has been transferred from Kenosha, Wis., to Detroit, reports C. H. Bliss, vice president and director of sales.

H. M. Salisbury, export sales manager, and J. L. Todd, assistant export sales manager, will have headquarters here.

Other departments recently moved to Detroit were sales, advertising, sales promotion, purchasing, organization, business management, and statistical. Service and car order departments also are represented in Detroit.

Purpose of the move, say Nash-Kelvinator officials, is to concentrate department heads of both divisions in the Kelvinator plant.

Installation Methods

Tests Show Conditions Under Which Heat Interchanger Will Produce Greatest Increase in Efficiency

NEW YORK CITY—"Effect of Superheat on Condensing Unit Efficiency," was discussed by L. W. Child, Evans Products Co., before the annual meeting of A.S.R.E. here last week, in which he described the increase determined in efficiency of a compressor tested with a heat interchanger superheating the suction gas.

The compressor used in the test was a 2 1/4-inch bore by 3-inch stroke two-cylinder air-cooled machine, carrying inlet and discharge valves in the head, and operating with Freon-12. It was belt-driven at a constant speed of 300 r.p.m. from a cradle dynamometer, and held at 120 lbs. per square inch gauge, head pressure.

"Points were taken at various compressor inlet temperatures for three inlet pressures, namely 40, 30, and 11 lbs. per sq. in. gauge. A short test was also run with 155 lbs. per sq. in. gauge head pressure and 40 lbs. per sq. in. gauge inlet pressure.

"Capacities were taken as pounds per minute of Freon-12, by means of two double-pipe calorimeters, one used as a condenser, the other as an evaporator. These calorimeters were supplied by gravity from two constant head, constant evaporator temperature water supplies, with water temperatures selected to give the external surface of each calorimeter a mean temperature equal to that of the surrounding air."

Temperatures of inlet vapor were controlled by a double-pipe cooler operated from a separate condensing unit, plus a double-pipe heater operated by steam, pointed out Mr. Child. In taking data, conditions were adjudged constant when the gas leaving the compressor under test reached a constant temperature.

"Once the initial point had been taken, a period of from 15 to 45 minutes was found to be required to obtain constant conditions, giving the operator ample time to calculate the results of the run between settings. Weight of refrigerant handled by each calorimeter was computed and the average of the two weights was taken as the net pounds per minute handled by the compressor."

The average difference in weight between the condenser and evaporator calorimeters was less than 2% for the 38 runs made on this test, exclaimed Mr. Child.

"The results of this test were determined from a careful plot of pounds of Freon-12 per minute, and brake horsepower against inlet temperatures for the various pressure conditions.

"The maximum deviation of any weight point from the curve was 2.5%, while 1.5% was the maximum deviation from the brake horsepower curves. The average deviation of points for either set was less than 1%."

The actual test results using a 30-lb. evaporator pressure gives

0.88 tons or 7% greater capacity than expected, pointed out Mr. Child. The error caused by this assumption of a constant volumetric efficiency becomes more important at lower evaporator pressures and temperatures, since the method tends to give greater capacities than shown by actual test.

Using 11-lb. evaporator pressure the test results show only 0.44 tons or 8% less than expected. Again, under this method, Mr. Child continued, it is common to assume the power consumption to be constant since the same volume is handled at the same pressures.

"The effect of a heat interchanger between liquid and return vapor lines can be readily determined by assuming the unit to be operating at 120 lbs. per sq. in. gauge condensing pressure, and 11 lbs. evaporating pressure, without an exchanger, and vapor at 20° entering the compressor, the rating will be 0.44 tons and 1.01 hp.

"Assume a heat exchanger, receiving liquid at 102°, and heating the vapor from 20° to 90°, to be placed in the system. The effect of this interchanger is shown in the following solution:

B.t.u. per lb. of vapor at 90° F.	= 91.06
B.t.u. per lb. of vapor at 20° F.	= 80.90
B.t.u. per lb. removed from liquid	= 10.16
B.t.u. per lb. of liquid at 102°	= 31.65
B.t.u. per lb. of liquid removed	= 10.16
B.t.u. per lb. of liquid entering evaporator	= 21.49

B.t.u. per lb. of saturated vapor leaving evaporator	= 78.65
B.t.u. per lb. of liquid entering evaporator	= 21.49
B.t.u. per lb. available	= 57.16
Lbs. per min. with compressor at 90° inlet and 11 lbs. per sq. in. 57.16 x 1.80	= 1.80
Capacity	= 0.514 tons
Capacity without interchanger	= 0.44 ton
Increase due to interchanger	= 17%
B.h.p. at 90° F. and 11 lbs. per sq. in.	= 1.03
B.h.p. at 20° F. and 11 lbs. per sq. in.	= 1.01
Increase in b.h.p.	= 2%

Obviously, said Mr. Child, this increase justifies the use of an interchanger for this particular set of conditions. The interchanger will be found to give smaller increases in capacity with higher inlet pressures.

For example, if used on this compressor at 40 lbs. per sq. in., it will give only a 7% gain in tonnage, with a 1.5% increase in power.

"The volumetric efficiency shows a rather surprising rise with inlet temperatures which may possibly be attributed to the presence of small droplets of oil, saturated with Freon, in the inlet vapor, plus the possibility of some liquid itself being present.

"In either case, once these droplets enter the cylinder, they will take some time to absorb enough heat to liberate their vapor. In a cool cylinder, it is conceivable for the piston to have reached the top of the stroke before liberation gets well under way.

"In this case the vapor may be liberated on the first part of the intake stroke, and so delay the opening of the inlet valve, thus causing a reduction in the volume of vapor entering the cylinder, thus reducing the volumetric efficiency.

"However, as the superheat of the entering vapor increases, the presence of liquid Freon, in oil, or in a free state, decreases. This tends to increase the volume handled by the compressor. As the inlet temperature increases, the cylinder temperature also increases. This has a tendency to liberate the vapor earlier in the stroke, consequently increasing the volumetric efficiency to a point higher than theoretically possible."

Air Conditioning Installed in Omaha in 1937 (Cont.)

(Continued from Page 20, Column 4)

Residences (Cont.)

Sam Reynolds, 1738 S. 36th Ave.	Servel	0.50
Alfred Schantz, 5601 Farnam	Kelvinator	0.50
George Schlagenhauf, 9301 N. 30th	Parr	1.50
Carl Swanson, 651 N. 57th	General Electric	5.75
R. F. Winegar, 3340 N. 48th Ave.	Airtemp	3.33

Restaurants, Etc.

Berry's Restaurant, 313 S. 17th	Carrier	5.25
Cantoni Restaurant, 723 S. 16th	Carrier	7.5
Carmen's, 16th & Howard	Airtemp	3.33
Chez Paree, 2402 E. Locust	Frigidaire	17.33
Flying Trapeze, 1607 Jackson	Frigidaire	3.0
Harkert Hamburgers, 1827 Farnam	Airtemp	8.25
Harkert Hamburgers, 1619 Farnam	Frigidaire	8.50
Italian Gardens, 1228 S. Sixth	Carrier	5.25
Kerns Cafe, 419 Broadway, Council Bluffs	General Electric	3.25
Mac's Corner Cafe, 19th & Douglas	Baker-Trane	8.5
Mondos Bar, 1706 Douglas	Carrier	8.0
Natelson's, 1517 Douglas	Airtemp	3.33
Oak Bar, 1324 Douglas	Frigidaire	8.66
Old English Inn, 50th & Dodge	York	12.0
Paris Bar, 14th & Douglas	Carrier	8.0
The Port, 1202 Farnam	Frigidaire	10.0
Wroth's Cafe, 311 S. 17th	Brunner	5.33

Stores

Beaton Drug Store, 15th & Farnam	Westinghouse	17.0
Bell Cigar Store, 109 S. 15th	Airtemp	6.66
B & G Hosiery, 300 S. 16th	Baker-Trane	6.0
Bloom-Erickson Co. (cigar), 203 S. 19th	Airtemp	6.66
Borsheim Jewelry, 1614 Farnam	Airtemp	6.66
Brodkey Jewelry Store, 1419 Douglas	Brunner	5.0
Buck's Booterie, Barker Bldg.	General Electric	2.66
Campbell Knitting Shop, Aquila Court	Airtemp	3.33
Diamond Cigar Store, 514 S. 14th	Frigidaire	11.33
Iten Barmettler Co., 20th & Taylor	Airtemp	1.0
Kindy Optical Co., 107 S. 16th	Lipman	5.0
Malashock Jewelry, 303 S. 16th	Frigidaire	3.33
Mary Ann Beauty Shop, 1620 S. 10th	Carrier	5.75
Metropolitan Drug Co., 15th & Farnam	Frigidaire	54.5
Neisner's, 16th & Farnam	Baker	100.0
Sample Fur, 1519 Farnam	Frigidaire	3.0
Silk Shop, Inc., 203 S. 15th	Frigidaire	5.75
Sportsman Cigar Store, 2008 Farnam	Baker-Trane	12.0
Walgreen Drug, 4902 Dodge	Baker-Trane	18.0

Theaters

Arbor, 2814 Leavenworth	Brunner	26.75
Avenue, 2819 Leavenworth	Brunner	52.0
Corby, 2800 N. 16th	Baker-Trane	48.75
Military, 2216 Military	York	76.0
Minne Lusa, 6718 N. 30th		6.5
North Star, 2417 Ames		10.5
Town Theater, 14th & Douglas	Westinghouse	25.0
Winn, 4006 1/2 Hamilton	Brunner	20.0

Total 1,587.00
*Ice system.

THE BUYER'S GUIDE

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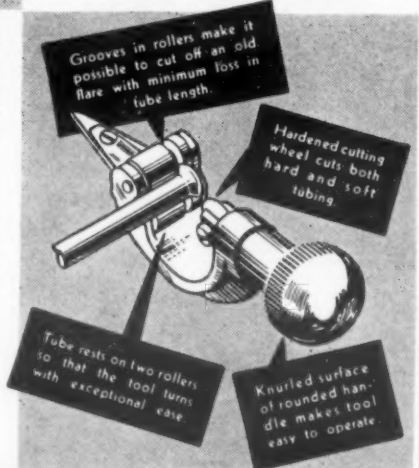
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Service Methods

Various Types of Pressure Relief Valves & How They Are Best Used in Refrigerating Systems

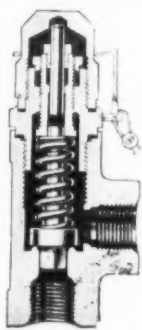
BY K. M. NEWCUM

Pressure relief valves are installed in the high-pressure side (also in the low-pressure side) of the refrigeration system. Their purpose is to automatically relieve to the atmosphere any excessive pressure which may develop in the system from any of several causes.

A Henry type 615 pressure relief valve is shown in Fig. 1. The connection below the seat is connected into the system. When the pressure below the seat exceeds the set opening pressure of the spring, the valve opens allowing this excessive pressure to be exhausted through the side outlet to the atmosphere.

When the pressure has receded to below the closing pressure of the spring, the valve closes. Emergency reseating is accomplished by removing the cap and tapping the top stem lightly. This forces the valve

Fig. 1—Henry Valve



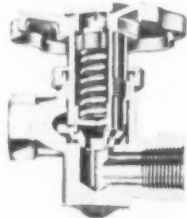
to a gas tight seat. When the seating is completed, the top stem should be pulled back up to its original position as illustrated, else it might affect the opening pressure of the valve.

Henry type 615 has an adjustable pressure (opening) range of from 30 to 300 lbs. It is adjusted at the factory for the desired opening pressure and sealed. The valve has a soft metallic seat.

Mueller catalog No. A-13533 pressure relief valve is shown in Fig. 2. For use with SO₂ and Freon-12 the valve has a neoprene (synthetic rubber) seat. For methyl chloride the seat is soft metal.

When pressure in excess of the opening pressure of the spring exists

Fig. 2—Mueller Valve



the valve automatically opens to relieve this pressure, then closes.

Should an emergency exist where the plant operator or the firemen desire to drain the refrigerant from the system before the pressure relief valve functions, the handwheel may be turned counter-clockwise. Opening the valve normally lifts the metal seat from the body seat to allow free relief of the refrigerant to the atmosphere. When the emergency has passed, the handwheel is turned clockwise to seat the valve tightly. It may then function automatically if required.

Kerotest type 40 pressure relief valve, which uses a neoprene seat, is shown in Fig. 3. It is obtainable with the following factory adjusted opening pressures: 135 lbs., 180 lbs., 200 lbs., 235 lbs., 250 lbs., and 300 lbs.

Kerotest type 679 valve is shown in Fig. 4. It is a combination pressure relief valve and serves the dual purpose of relieving the high pressure to the low side of the system, thence through a low side valve to the

atmosphere. The right-hand lower connection (Fig. 4) is connected into the high-pressure side of the system. Lower left-hand connection is connected into the low-pressure side of the system. Top connection is to the atmosphere.

When the high side pressure exceeds the opening pressure of the high side valve it opens (available high side opening pressures on 679 are the same as for type 40). Pressure from the high side is by-passed into the low side. If the excessive high side pressure continues the high side valve stays open. The low side pressure builds up to 120 lbs. At this

Fig. 3—Kerotest Type 40



point the low side valve opens allowing the low side pressure in excess of 120 lbs. to be relieved to the atmosphere.

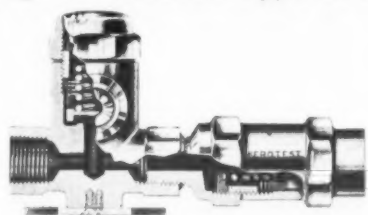
If high side pressure recedes before low side pressure has reached 120 lbs. (before low side valve opens) high pressure valve closes and no refrigerant is lost to the atmosphere.

Two single pressure relief valves (one adjusted for high side pressure and the other adjusted for low side pressure) may be used to serve this combination purpose.

It must be observed, however, that the opening pressure of the high side valve is affected by the pressure in the low side.

When connected from the high-pressure side to the low-pressure side, the high-pressure valve will open at the set spring (opening pressure) plus the prevailing low side pressure. For example, assume a high-pressure valve connected from high side to

Fig. 4—Kerotest Type 679



low side is set to open at 180 lbs. pressure (180 lbs. high side, 0 lbs. atmosphere) and the low side pressure is 20 lbs. The high side valve will open at 180 lbs. plus 20 lbs., or 200 lbs.

As the high pressure passes into the low side, the low side pressure increases. So does the opening pressure of the high side valve.

Pressure relief valves should always be connected into the system at a point where they cannot be closed off by operating any shut-off valves. Their sole purpose is to protect the system from bursting in event of dangerously high pressures. If they are so installed that they may be shut off from the system by a service valve they may be closed off at just the time they are called upon to serve in an emergency.

Directly into the liquid receiver, above the liquid level, is the logical point to connect a high side valve. Connected directly into the liquid receiver the valve cannot be closed off, hence it is always responsive to high side pressures. Also, this location provides protection to the liquid receiver if the entire refrigerant charge is pumped back into the receiver for any reason.

It is common practice in air-conditioning systems to pump back and store all the liquid refrigerant in the receiver for the winter. Should the pressure-relief valve be connected

National Home Study Council Director Draws Attention of A.S.R.E. to Home Study Courses in Refrigeration

NEW YORK CITY—Speaking before the national convention of the A.S.R.E. here last week on "Trade Schools in Refrigeration," Dr. J. S. Noffsinger, director of National Home Study Council, Washington, D. C., expressed deep concern over the possibility of racketeering practices creeping into the ever increasing number of home study courses offered in refrigeration and air conditioning.

Dr. Noffsinger praised as "splendid" the work being done by the good home study schools in bringing into the home the opportunity for more than 1,000,000 adults to keep abreast of new industries, so that they might serve in new fields, thus increasing their earning power and the earning power of the nation.

Pointing out that there are now approximately 25,000 home study courses in use, Dr. Noffsinger said that 80% of the enrollment is composed of men working in industry and that approximately 52% of the enrolled students are college graduates.

75% IN GOOD SCHOOLS

Home study schools were divided into three classifications by Dr. Noffsinger as follows: good, medium, and fraudulent. Of approximately 350 schools offering some type of home study course, 52 have the approval of the National Home Study Council. The 52 schools on the approved list teach 75% of all the enrolled students, according to Dr. Noffsinger.

There are around 50 schools offering home study courses in refrigeration and air conditioning. Only seven out of the 50 have met the requirements of N.H.S.C. as being in the council's opinion properly set up with a good course and a competent teaching staff composed of trained air-conditioning and/or refrigeration engineers.

It is estimated that there are between 40,000 and 50,000 students now enrolled in refrigeration and air-conditioning schools. Concerned with the large number of students, Dr. Noffsinger, in behalf of N.H.S.C., appealed to the A.S.R.E. for cooperation in determining the approximate number and type of men needed annually by the industry.

TRACES TREND

To illustrate the trend and growth of home study courses, Dr. Noffsinger pointed out that with the chronological appearance of new industries starting with automobiles, there has been a gradual growth and shifting of schools to fill the need for trained men, and in the case of the racketeering schools to "cash in" on such new industries as electricity, aviation, radio, civil service, Diesel engines, and refrigeration and air conditioning.

into the liquid line or some other part of the system where it can be closed off by valves, obviously no protection against high pressure from fire will be afforded. Connected directly into the liquid receiver, proper protection will be had the year around.

Some cities have local ordinances governing the pressure setting and installation of pressure-relief valves. Some of these ordinances require that a line be run from the relief valve to a suitable out-of-doors location. This requirement is especially necessary when an inflammable or highly toxic refrigerant is employed.

Dr. Noffsinger advanced the opinion that in 1937 there were more salesmen selling Diesel engine courses than there were Diesel engine jobs.

Racketeering in home study schools may now be more effectively

dealt with due to a recent decision of the Supreme Court which placed schools doing a mail order business in interstate commerce and under the regulation of the Federal Trade Commission, according to Dr. Noffsinger.

Fraudulent claims made by mail are investigated by the Post Office Department and action taken by that department to prevent further use of the mails for such purposes is another way with which racketeering in home study schools may be handled, stated Dr. Noffsinger.

THE BUYER'S GUIDE

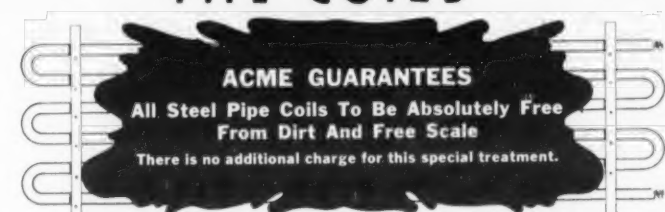
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